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CRITICAL THINKING ON ISSUES
OF MEDICAL LICENSURE AND DISCIPLINE

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Quality Assurance and Maintenance of Competence Assessment Mechanisms in the Professions

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HOW ARE DEMOGRAPHICS OF THE U.S. PHYSICIAN SUPPLY CHANGING?

"The distribution of physicians by gender varies considerably by age categories; a greater percentage of female physicians tend to fall within younger age categories than male physicians."

From "A Census of Actively Licensed Physicians in the United States, 2016," *page 7.*

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Competence, like truth, beauty and contact lenses, is in the eye of the beholder.

— Laurence J. Peter

What makes a physician competent? Educator Laurence Peter — whose famous "Peter Principle" theorized that those advancing in the workplace will continue to rise until they reach the level of their own incompetence — believed that we know competence when we see it or feel it. That certainly was the case a century ago, when medicine was as much art as it was science. "Beloved physician healer" status was bestowed upon many medical professionals then — when easing the patient's anxiety and pain was, in many instances, all the physician could offer, and when compassion and interpersonal skills defined competence as much as scientific knowledge. In that environment, competence was largely a subjective judgment. Today the vast majority of medical practice is evidence-based and the effort in recent years has been to establish more standardized, objective approaches to determining competence — such as the much-debated Maintenance of Certification (MOC) programs required by medical specialty organizations. But will this effort succeed? In this issue of JMR, we offer **thought-provoking analysis of MOC techniques used by various professions in Ontario, Canada and a candid assessment of their pros and cons (page 22)**. The upshot is that our Canadian colleagues are still learning — just as we are — and that despite our efforts, a "gold standard" for assessing competence still does not exist. As of yet, no one can clearly define competence in a way that can easily be applied to all practitioners in any discipline. We often are quite easily able to identify gross incompetence, but "borderline" or "meets minimal standards" judgments are much harder to make — and that has implications for medical regulators…Adding another dimension to the discussion of competency is the other lead article in this issue of JMR, our biennial publication of highlights from **the FSMB's Census of Actively Licensed Physicians in the United States (page 7)**. The latest FSMB census shows that demographic changes in our physician workforce continue — including rising portions of the physician population who are female, who have trained at Caribbean medical schools, or who are licensed as osteopathic physicians (DOs). In the midst of an increasingly diverse workforce, our quest to find universally applicable standards for determining competence will no doubt continue to be a challenge. But try, we must.

Heidi M. Koenig, MD
Editor-in-Chief

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Maine Joins Interstate Medical Licensure Compact

On June 24, Maine became the 22nd state to join the Interstate Medical Licensure Compact (IMLC), an initiative by state medical boards that aims to streamline the licensure process for physicians who wish to practice in multiple states.

Maine joins 21 other states that have enacted legislation to expedite multi-state medical licensure since 2015. These states include Alabama, Arizona, Colorado, Idaho, Illinois, Iowa, Kansas, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, Pennsylvania, South Dakota, Tennessee, Utah, Washington, West Virginia, Wisconsin and Wyoming.

The initiative remains under consideration in Michigan, Rhode Island, Texas, the District of Columbia and Guam.

The Interstate Medical Licensure Compact Commission's application process officially launched on April 6, 2017, and its first license was issued on April 20, 2017. To learn more about the Interstate Medical Licensure Compact, please visit www.IMLCC.org.

NBME Seeks Nominations for 2018 John P. Hubbard Award

The National Board of Medical Examiners (NBME) is seeking nominations for the 2018 John P. Hubbard Award, which recognizes individuals who have made a significant and sustained contribution to the assessment of professional competency and educational program development at any level along the continuum of medical education and delivery of health care.

It is expected that the successful candidate will have demonstrated outstanding achievement in one or more of the following areas:

- A substantial record of fostering the development of evaluation methods and/or measurement techniques.
- Personal contributions to basic or applied research in the creation or improvement of assessment methodology.
- Accomplishment in improving the quality of evaluation at an organizational level.
- Contributions through the education or mentoring of students, colleagues, fellows, or graduate students, to further progress in evaluation.

A letter of nomination is to be submitted from a primary sponsor specifically addressing the nominee's achievements in relation to at least one of the criteria and is to be accompanied by the nominee's current curriculum vitae. Materials must be received by NBME no later than September 11, 2017. For more information, please call (215) 590-9218 or send an email to HubbardAward@nbme.org.

FSMB Releases Updated Guidelines for the Use of Opioid Analgesics

The FSMB has released its updated "Guidelines for the Chronic Use of Opioid Analgesics," which were officially adopted as policy by the FSMB House of Delegates at the FSMB's 2017 Annual Meeting.

The FSMB engaged with experts in pain medicine and addiction, government officials and other thought leaders over the past year and a half to conduct a thorough review and analysis of FSMB's existing policy and other state and federal guidance documents on the prescribing of opioids in the treatment of pain.

The new policy offers guidelines on a wide range of opioid-related topics, including patient assessments, evaluations and ongoing monitoring; use of treatment agreements; query to state prescription-drug-monitoring programs; the decision to initiate and discontinue opioid therapy; concurrent use of benzodiazepines and opioids; and the prescribing of naloxone and methadone.

To read the updated Guidelines for Chronic Use of Opioid Analgesics, visit www.fsmb.org/policy/advocacy-policy/policy-documents.

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Rapidly Evolving Medical Landscape Presents Regulators with New Challenges and Fresh Opportunities

Gregory B. Snyder, MD, DABR
Chair, Board of Directors
Federation of State Medical Boards

IN BRIEF **Dr. Snyder highlights a variety of key issues for medical regulators — including current challenges and the opportunities they present.**

As the Federation enters its 106th year of existence, I begin my year mindful of the privilege that has been handed to me and fully cognizant of ever-increasing demands on medical regulators in a shifting environment that continues to increase in complexity.

From the expansion of electronic medical records and telemedicine to new public health threats and rapidly changing workforce demographics, there is much for state medical board members to contemplate — and respond to — as they fulfill their mission of public protection.

Although each state is unique in board composition, staffing and resources, the challenges we all face remain similar, and as a community of regulators we have chosen the Federation to serve as a forum, facilitator, convener and clearinghouse to support each board as needed in addressing these challenges.

In the year to come, the Federation will continue to offer a broad range of resources and assistance to the nation's state medical boards via our key operational offerings, including the United States Medical Licensing Examination, the Uniform Application for Physician State Licensure, the Federation Credentials Verification Service and the Physician Data Center. We will also focus on the increasing necessity of our advocacy role with legislators and policy makers, and on providing data resources, technology and research services; educational content and specialized training for state board leaders; and communications assistance and networking.

We remain strongly committed to representing the medical regulatory community in Washington, D.C., where our advocacy team is now in its seventh year of operation. Our advocacy operations continue to expand, and our Grassroots Advocacy Network now numbers well over 200 members. This provides us with an effective mobilizing force that can be activated to represent the interests of our state and territorial medical regulators on key issues.

We will also continue to work tirelessly this year to help state boards navigate the new legal environment created by the U.S. Supreme Court's decision in *North Carolina State Board of Dental Examiners v. Federal Trade Commission* — which brought new antitrust vulnerabilities to boards and their staff by removing "state actor immunity." Our advocacy staff continues to consult closely with policymakers and legislators in seeking solutions to help preserve and protect boards in the wake of the decision.

Our service to the regulatory community includes our newly updated and upgraded technological capacities — including serving as an improved communications hub for the boards via video-conferencing and website improvements and offering expanded research services. It also includes our exciting work in Continuing Medical Education (CME), where we were recently approved as an accredited CME provider by the Accreditation Council for Continuing Medical Education (ACCME). Our status as an approved CME provider means that we will gain greater efficiency and flexibility in our educational programming activities — and that we can now offer free accreditation services to state medical boards to help them meet their educational needs.

Our service to the regulatory community, as always, includes bringing state regulators together in new ways to network and share best practices. In late July, the FSMB's Education Committee will meet to begin planning next year's annual meeting, to be held in April in Charlotte, North Carolina — and I am personally committed to ensuring that the content and opportunities for exchange among leaders at this meeting will be of the highest value possible, specifically given the challenges that we face based on the location and prohibition of some boards to

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travel to North Carolina. We are actively investigating interactive solutions that will allow ALL members of our House of Delegates to participate, whether onsite or remotely.

Alongside of these opportunities to serve our boards is our duty to help advance guidelines and policies that address ongoing and emerging issues that impact the practice of medicine. The FSMB's House of Delegates has historically tackled issues through a process that includes the work of targeted committees and workgroups — which dig deep into policy challenges and make recommendations for action.

Recent highlights in this area include our adoption earlier this year of *Guidelines for the Chronic Use of Opioid Analgesics*, which extend the FSMB's longstanding efforts to address the nation's opioid abuse epidemic. The workgroup that developed these guidelines, composed of policymakers and national experts in pain medicine and addiction, worked for 18 months to ensure their recommenda-tions were carefully and thoughtfully structured.

Among our top priorities for action in the coming year are:

Physician Wellness and Burnout: Our Workgroup on Physician Wellness and Burnout launched an important initiative last year seeking to raise awareness of this growing issue among state boards and other health care stakeholders and to develop resources to help keep physicians on the path to wellness.

THE INCIDENCE OF PHYSICIAN STRESS AND BURNOUT CONTINUES TO RISE IN THE UNITED STATES.

This initiative will continue to be a priority for the FSMB during the year to come, as the statistics continue to be extremely troubling. The incidence of physician stress and burnout continues to rise in the United States, with more than 50% of physicians now reporting at least one symptom of burnout. For some specialties, the rate is even higher — and the consequences impact not just physicians, but the patients they treat as well.

Effectiveness of State Medical Boards: With state governments increasingly facing restricted budgets and regulators often being asked to do more with less, steps to ensure the quality of regulation and oversight is essential. The FSMB's Workgroup on Board Education, Service and Training (BEST) is working diligently to develop resources to support members of state medical boards — including resources developed by experienced state board members to assist future state regulators in becoming well informed and effective in their jobs.

Prescription Drug Monitoring Programs: With deaths related to opioid abuse still alarmingly high in the United States, the use of Prescription Drug Monitoring Programs (PDMPs) is on the rise. The FSMB has launched a new workgroup that will evaluate the impact of mandatory PDMP query on patient outcomes and prescribing, as well as developing recommendations to state medical boards regarding physician utilization of PDMPs and the implications and challenges of mandatory usage.

Stem Cell Research: We have launched a new workgroup that will look into practices in regenerative and adult stem cell therapy — specifically in the areas where there is limited supportive data and where questionable practices are emerging that raise serious concerns for patient safety. This group will evaluate the prevalence of patient-harm related to stem cell therapies and identify best practices for the future.

Education about Regulation: The FSMB's Workgroup on Education about Medical Regulation began development of a series of online modules last year that is intended to help educate the next generation of physicians on their responsibilities within the medical licensing and regulation system in the United States. The idea is to help these developing physicians avoid the ethical and professional issues that might lead to disciplinary action — an especially important goal in view of all the rapid changes in health care, including the rise of telemedicine. The workgroup released its first online module earlier this year and is continuing its work.

Clearly, the medical regulatory community has much to consider as it strives to stay ahead of trends and developments in health care. The Federation is the embodiment of collaboration for and about the pivotal role of state-based medical regulation and its responsibility to protect the public. Our Federation is fully active and engaged at every level and remains solely committed to supporting its member boards at each step of the way.

I am honored and privileged to serve as Chair of the FSMB this year as we address these challenges together, and I am fully confident in the skill and leadership of our House of Delegates, which will allow us to continue to be successful this year and in the decades to come.

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A Census of Actively Licensed Physicians in the United States, 2016

Aaron Young, PhD; Humayun J. Chaudhry, DO, MS; Xiaomei Pei, PhD; Katie Arnhart, PhD; Michael Dugan, MBA; and Gregory B. Snyder, MD

ABSTRACT: An accurate understanding of the demographic and state medical licensure characteristics of physicians in the United States is critical for health care workforce planning. Overall changes in the nation's population demographics, state and federal medical regulatory policies and dynamics surrounding the ongoing health care reform debate further highlight the need to have an up-to-date census of actively licensed physicians across all medical specialties.

This article uses data received by the Federation of State Medical Boards (FSMB) from the nation's state medical and osteopathic licensing boards to report and summarize key features of actively licensed physicians in the United States and the District of Columbia. Our biennial census, current through the end of 2016, identifies a total of 953,695 actively licensed allopathic and osteopathic physicians serving a national population of 323 million people. This represents a net physician-increase of 12% from the 2010 census. From 2010 to 2016, the actively licensed U.S. physician-to-population ratio increased from 277 physicians per 100,000-population to 295 physicians per 100,000-population. Females now make up one-third of all licensed physicians, with osteopathic physicians and Caribbean medical graduates continuing to demonstrate substantial increases in both their absolute numbers and as a percentage of all actively licensed physicians from the 2010 to 2016 time period.

Introduction

Health care in the United States remains in a period of uncertainty and transition, as the Affordable Care Act (ACA) of 2010 faces existential challenges from the right and calls for modification from the left. The executive and legislative branches of our federal government are seeking ways to fundamentally alter the way in which health care is delivered and reimbursed across the country. Changes in population demographics, medical regulatory policies and health care reform are all part of a broader public discourse that highlights the need to have an up-to-date census of physicians who are licensed to practice medicine.

Concerns persist over whether or not the growth rate of physician supply will keep pace with growing health care demands. Health care practitioners, state medical boards and policymakers will need to adjust to these changes, whether they are revolutionary or evolutionary. Growing health care demands have notably focused around the large group of aging "baby boomers," generally those individuals who were born between the mid-1940s and the mid-1960s. While the demands of boomers have captured the current attention of medical researchers, policymakers and providers, millennials — those born between 1982 and 2000 — are now the nation's largest living generation. In 2015, millennials represented 83.1 million people in the United States, compared to 75.4 million baby boomers.[1] With the inclusion of immigration, millennials are expected to grow in number, reaching their peak population around 2036.[2] Future planning needs to take into account the health care needs of all generations.

PHYSICIAN SUPPLY STRIVES TO ADAPT TO INCREASING HEALTH CARE DEMANDS AS THE NATION'S POPULATION AGES AND EVOLVES.

Physician supply strives to adapt to increasing health care demands as the nation's population ages and evolves. United States first-year medical school enrollment has increased by 28% since 2002.[3] In 2016, 88,304 medical students were enrolled, compared to 81,934 medical students in 2012.[4] The FSMB's prior and current census reports, between 2010[5] and 2016, reflect an increase of 12% in the number of physicians licensed to practice medicine throughout the country. While there are more

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allopathic and osteopathic medical schools and medical students overall in 2016 than in 2010, limits on funded graduate medical education positions as a result of the Balanced Budget Act of 1997 are preventing many U.S. graduates from pursuing the post-graduate training necessary for medical licensure eligibility.[6] Growth in other health care professions, meanwhile, continues to supplement the delivery of care provided by physicians. From 2010 to 2016, the number of certified physician assistants (PAs) grew by 44%,[7] and according to the U.S. Department of Labor, employment for PAs is expected to increase by 30% between 2014 and 2024.[8] It is expected that the number of nurse practitioners will also continue to grow, from 128,000 in 2008 to 244,000 by the year 2025.[9]

Because of increases in medical school numbers and enrollment, expanded health care roles and practice rights for non-physician clinicians and delayed retirement by older physicians, some assert a physician shortage does not exist.[10] Concerns about health care workforce shortages remain, however, due to a growing and aging U.S. population, as demands are predicted to exceed supply.[11] While earlier projections by workforce researchers anticipated physician shortages to reach upwards of 159,300 physicians by 2025,[12] more recent predictions suggest a still-alarming shortage between 40,800 and 104,900 physicians by 2030.[11]

Increasing the number of practicing physicians in the United States is one of many ways in which the medical profession is responding to increased health care demands. Modifying and adapting the delivery of health care is another way that health policymakers and leaders are responding to the issue. In 2016, the FSMB surveyed state medical boards, asking which medical regulatory topics were most important to them. The top five topics were telemedicine, opioid prescribing, the Interstate Medical Licensure Compact (IMLC), physician reentry into practice and medical marijuana.[13] The growth of telemedicine and the launch of the IMLC highlight how health care delivery is responding to health care demands. Telemedicine offers opportunities for patients to receive health care in settings beyond traditional medical offices and in remote locations or long distances from providers.[14,15] The IMLC offers a way for qualified physicians to apply for multiple individual state medical licenses, thus allowing them to deliver care in additional locations and/or via telemedicine, in an efficient and expedited manner.[16] While the introduction of telemedicine and the IMLC are intended to improve health care outcomes, these advances also impact the way regulators and health policymakers define and account for actively licensed physicians in their jurisdictions.

INCREASING THE NUMBER OF PRACTICING PHYSICIANS IN THE UNITED STATES IS ONE OF MANY WAYS IN WHICH THE MEDICAL PROFESSION IS RESPONDING TO INCREASED HEALTH CARE DEMANDS.

Beneath the surface of many conversations regarding the health care workforce is the changing political climate. The ACA increased the number of Americans with health insurance during the Obama administration, but its implementation came with a price. Fines were issued to certain individuals who did not enroll in health insurance privately or through the exchanges created under the law.[17] States that did not implement Medicaid expansion also saw fewer benefits for certain populations[18] and insurance premiums have doubled in many states since 2013.[19] With the election of President Trump and with both the House of Representatives and Senate now controlled by Republicans, active efforts are underway to either "repeal and replace" the ACA or make substantial changes to the law designed to save federal money for other purposes. This year, and the years to come, will bring a high degree of uncertainty around health care reform as both parties struggle for bipartisanship on an issue that impacts one-sixth of the nation's economy.[20]

As an advocate for patient safety and quality health care, the FSMB is aware that the United States is in a time of transition with regard to population demographics, medical regulatory issues and health care reform. One tangible way the FSMB can contribute to the discussion surrounding these issues is by regularly publishing a census of actively licensed physicians. This article uses data gathered by the FSMB from each of the state medical and osteopathic boards to provide a comprehensive analysis of the 2016 physician population who were actively licensed in the United States and the District of Columbia. This biennial census was first conducted in 2010[5], and again in 2012[21] and 2014.[22] Combined, these censuses demonstrate a growing and more diverse physician population.

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Methodology

The FSMB maintains a comprehensive central repository of data (the Physician Data Center, or PDC) from state medical and osteopathic boards responsible for the licensing and discipline of physicians in the United States. The database contains comprehensive biographical, educational and disciplinary information about licensed allopathic and osteopathic physicians as well as the nation's physician assistants. The repository is unique in that it is the only national database containing the most current information from U.S. state and territorial jurisdictions that have granted physicians a license, or a renewal of that license, to practice medicine. The FSMB's database is continuously updated and contains more than 2 million physician records, including information about physicians who are currently licensed, are no longer licensed or are deceased. To obtain an accurate count and precise information about physicians possessing an active license to practice medicine, we conducted a census using the most recent data received by the FSMB during the 2016 calendar year.

THIS BIENNIAL CENSUS WAS FIRST CONDUCTED IN 2010, AND AGAIN IN 2012 AND 2014. COMBINED, THESE CENSUSES DEMONSTRATE A GROWING AND MORE DIVERSE PHYSICIAN POPULATION.

The FSMB gathers license information for all 65 state medical and osteopathic boards in the United States. Four additional territorial medical boards (Guam, Northern Mariana Islands, Puerto Rico and U.S. Virgin Islands) are also member boards of the FSMB but, as in previous censuses, data from these boards were not included in the 2016 physician census. To ensure quality and up-to-date information, the majority (91%) of state boards in the country routinely provide medical licensure information weekly or monthly (all provide it at least quarterly) to the PDC.

Most physician records are first entered into the PDC database when U.S. medical school students or International Medical Graduates (IMGs) register to take the United States Medical Licensing Examination (USMLE). The USMLE is an assessment program created in 1992 that is co-sponsored by the FSMB and the National Board of Medical Examiners (NBME). The USMLE is accepted for state medical licensure eligibility by all jurisdictions in the United States and required of all U.S. allopathic and IMG physicians who apply for a state medical license.

In cases where U.S. osteopathic medical students do not register for the USMLE or for physicians who were first licensed prior to the introduction of the USMLE or the Comprehensive Osteopathic Medical Licensure Examination (COMLEX-USA) in the early 1990s, licensure files from state boards typically serve as the initial PDC record. These licensure files also serve as the primary source for a physician's record of successful completion of initial licensure requirements, which may include older assessments like the examinations of the NBME, the National Board of Osteopathic Medical Examiners (NBOME) or the FSMB's Federation Licensing Examination (FLEX).

FROM 2010 TO 2016, THERE HAS BEEN A NET INCREASE OF 12%, OR 103,610 ACTIVELY LICENSED PHYSICIANS NATIONWIDE.

When the FSMB receives additional physician data, each record is then matched to a master physician-identity table using a set of algorithms developed by the FSMB. This systematic process allows the FSMB to track the same physician across multiple jurisdictions if more than one state license is sought at any time during the physician's professional career. Additional physician data includes disciplinary information and any specialty certification information.

Physician specialty and subspecialty certification information received by the FSMB comes from the American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA). Even though physicians in the United States are not licensed based on their specialty or practice focus, and specialty board certification is not an absolute requirement for medical licensure, specialty designation is an important attribute to the state medical boards for informational purposes. As another measure to ensure up-to-date information, deceased physicians are identified and flagged in the FSMB database by cross-referencing physician records with the Death Master File of the Social Security Administration (SSA), a federal database that contains more than 86 million records of reported deaths.[23]

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Table 1
Population Characteristics

Actively Licensed Physicians in the United States and the District of Columbia, 2010 and 2016	2010[a]		2016	
	Counts	Percentages	Counts	Percentages
Total	**850,085**	**100.0%**	**953,695**	**100.0%**
Degree				
Doctor of Medicine (MD)	789,788	92.9%	870,312	91.3%
Doctor of Osteopathic Medicine (DO)	58,329	6.9%	81,115	8.5%
Unknown	1,968	0.2%	2,268	0.2%
Medical School				
U.S. and Canadian Graduates (MD or DO)	649,736	76.4%	724,640	76.0%
International Graduates	188,598	22.2%	216,182	22.7%
Unknown	11,751	1.4%	12,873	1.3%
Age				
Less than 30	16,519	1.9%	18,023	1.9%
30-39 years	184,120	21.7%	208,799	21.9%
40-49 years	214,595	25.2%	227,953	23.9%
50-59 years	215,541	25.4%	214,422	22.5%
60-69 years	138,815	16.3%	183,870	19.3%
70+ years	75,627	8.9%	94,969	10.0%
Unknown	4,868	0.6%	5,659	0.6%
Gender				
Male	583,315	68.6%	617,186	64.7%
Female	252,861	29.7%	319,145	33.5%
Unknown	13,909	1.6%	17,364	1.8%
Certified by an ABMS/AOA Specialty Board[b]				
Yes	633,733	74.5%	752,558	78.9%
No	216,352	25.5%	201,137	21.1%
Number of Active Licenses				
1	657,208	78.4%	746,417	78.3%
2	142,423	15.7%	148,250	15.5%
3 or more	50,454	5.8%	59,028	6.2%

a. Counts for licensed physicians by medical school, age and gender have been revised and updated for 2010.

b. FSMB matched physician license data with ABMS and AOA certification data to obtain counts of physicians with an active license in the U.S. and District of Columbia who also hold one or more active specialty or subspecialty certificates from an ABMS or AOA member board. The counts included in this census may vary from counts reported by the ABMS and AOA. For example, ABMS Board Certification counts measure a broader geographic base and additional specialty related degrees. The number of certified physicians for 2010 includes only those with ABMS certifications because the FSMB did not receive AOA certification data until 2015. As with all counts and percentages in the 2016 FSMB Census, resident physician licenses were excluded when such licenses could be identified.

Source: 2016 FSMB Census of Licensed Physicians.

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Results

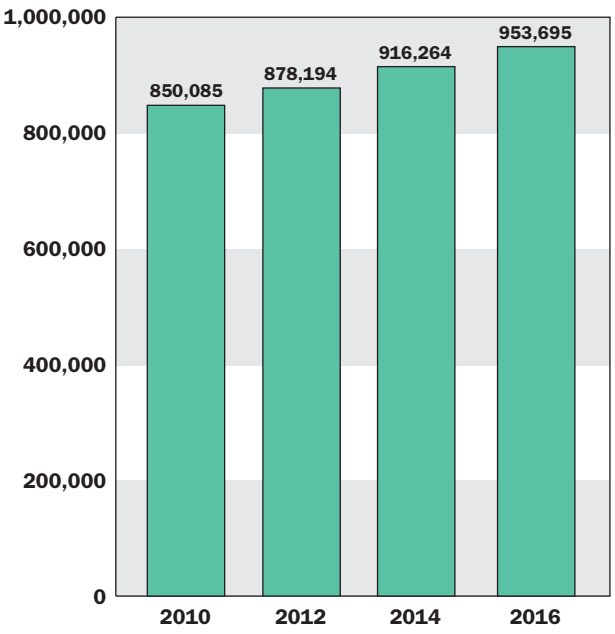
Table 1 summarizes the population characteristics of the 953,695 physicians who are actively licensed in the United States and the District of Columbia* as of 2016, with comparison to the 850,085 actively licensed physicians that the nation had in 2010. This is detailed by degree, medical school, age, gender, certification of specialty board and number of active licenses. Figure 1 illustrates the continuous growth of the actively licensed physician population. From 2010 to 2016, there has been a net increase of 12%, or 103,610 actively licensed physicians nationwide.

In 2015 and 2016, a total of 160,781 new medical licenses were issued by state medical boards, including licenses issued for the first time or subsequently, in one or more jurisdictions. During these two years, 38,896 physicians received their very first medical licenses from state medical boards, accounting for 24% of all newly issued licenses for those years.

The Doctor of Medicine (MD) remains the dominant degree (91%) of actively licensed physicians in 2016, with Doctors of Osteopathic Medicine (DOs) constituting 9% of the actively licensed population.

* Future references to the U.S. include the District of Columbia

Figure 1
Actively Licensed Physicians in the United States and the District of Columbia by Year



Source: 2016 FSMB Census of Licensed Physicians.

Although there are substantially fewer DOs than MDs nationally, the osteopathic profession is growing at a relatively faster rate. The number of actively licensed physicians who are DOs increased by 39% between 2010 and 2016, compared with a 10% increase in the number of MDs during the same time period.

In 2016, 76% of actively licensed physicians are U.S. or Canadian medical graduates (USMGs), 23% are international medical graduates (IMGs) and 1% have an unknown medical school because the information was not available to the FSMB (Table 1).

THE NUMBER OF ACTIVELY LICENSED PHYSICIANS WHO ARE DOs INCREASED BY 39% BETWEEN 2010 AND 2016, COMPARED WITH A 10% INCREASE IN THE NUMBER OF MDs...

The 953,695 actively licensed physicians in 2016 graduated from 2,023 medical schools in 167 countries from around the world. From 2010 to 2016, the number of actively licensed USMGs has increased by 12%, and the number of actively licensed IMGs has increased by 15%.

Table 2 lists the 10 U.S. allopathic and osteopathic schools with the largest number of graduates who are actively licensed in the United States. The 10 allopathic programs with the largest number of graduates account for approximately 10% of all actively licensed allopathic physicians. Comparatively, the 10 osteopathic schools with the largest number of graduates account for 62% of actively licensed osteopathic physicians.

Table 3 lists the 10 international medical schools with the largest number of graduates who are actively licensed in the U.S. These 10 international medical schools account for 21% of all actively licensed IMGs in the U.S. Of the 216,182 actively licensed IMGs, the largest number have graduated from schools in India (n = 49,563 or 23%), followed by the Caribbean (n = 35,971 or 17%), the Philippines (n = 13,507 or 6%), Pakistan (n = 12,410 or 6%) and Mexico (n = 10,111 or 5%). Physicians from all other international countries (n = 94,620) constitute 44% of IMGs who are actively licensed in the U.S. in 2016 (Figure 2).

Of the five countries and regions that have the largest number of actively licensed IMGs in the United States, the number of physicians from four of these locations increased from 2010 to 2016. Actively licensed physicians who graduated from

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Table 2

U.S. Medical Schools and Colleges of Osteopathic Medicine

U.S. Medical Schools and Colleges of Osteopathic Medicine with the Largest Number of Graduates Actively Licensed in the United States and the District of Columbia, 2016	City and State	Number of Actively Licensed Physicians
Medical School		
Indiana University School of Medicine	Indianapolis, IN	11,393
University of Minnesota Medical School	Minneapolis, MN	10,150
Wayne State University School of Medicine	Detroit, MI	9,341
Ohio State University College of Medicine and Public Health	Columbus, OH	8,999
SUNY Downstate Medical Center	Brooklyn, NY	8,988
Jefferson Medical College of Thomas Jefferson University	Philadelphia, PA	8,799
University of Illinois College of Medicine	Chicago, IL	8,729
University of Texas Medical School at Galveston	Galveston, TX	8,163
University of Michigan Medical School	Ann Arbor, MI	8,134
New York Medical College	Valhalla, NY	8,037
College of Osteopathic Medicine		
Philadelphia College of Osteopathic Medicine	Philadelphia, PA	7,452
Des Moines University, College of Osteopathic Medicine	Des Moines, IA	6,548
Kansas City University of Medicine and Biosciences	Kansas City, MO	6,324
NY Institute of Technology College of Osteopathic Medicine	Old Westbury, NY	5,317
Kirksville College of Osteopathic Medicine	Kirksville, MO	5,188
Midwestern University, Chicago College of Osteopathic Medicine	Downers Grove, IL	4,791
Western University, College of Osteopathic Medicine of the Pacific	Pomona, CA	4,278
Nova Southeastern University, College of Osteopathic Medicine	Fort Lauderdale, FL	3,703
UNT Health Science Center, Texas College of Osteopathic Medicine	Fort Worth, TX	3,580
Michigan State University College of Osteopathic Medicine	East Lansing, MI	2,814

Source: 2016 FSMB Census of Licensed Physicians.

Table 3

International Medical Schools

International Medical Schools with the Largest Number of Graduates Actively Licensed in the United States and the District of Columbia, 2016	Country	Number of Actively Licensed Physicians
International Medical School		
St. George's University	Grenada	9,296
Ross University	Dominica	8,618
Universidad Autonoma De Guadalajara	Mexico	5,785
University of Santo Tomas	Philippines	4,545
American University of the Caribbean	Saint Maarten	4,267
Dow Medical College, University of Karachi	Pakistan	3,181
University of Damascus	Syria	2,745
Osmania Medical College	India	2,157
University of the East, Ramon Magsaysay Memorial Medical Center	Philippines	2,070
University of the Philippines	Philippines	2,044

Source: 2016 FSMB Census of Licensed Physicians.

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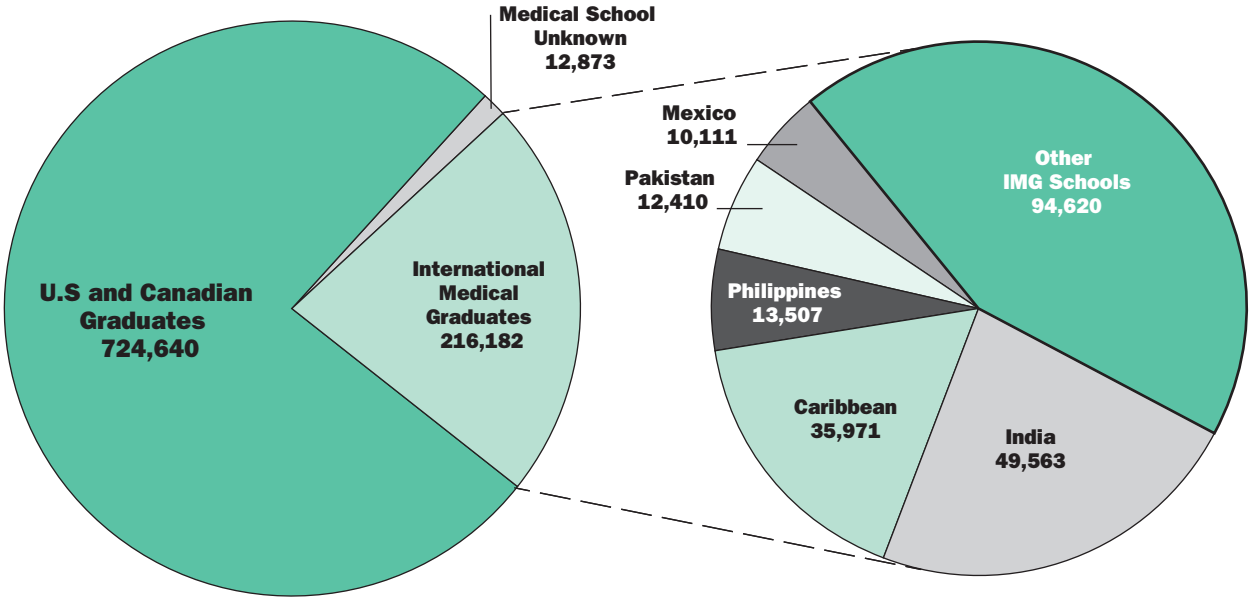
medical schools in the Caribbean had the largest growth, from 22,820 to 35,971, or an increase of 58% between 2010 and 2016. Actively licensed physicians who graduated from the Philippines decreased by 10% between 2010 (n = 14,946) and 2016 (n = 13,507) (Figure 3).

Figure 2

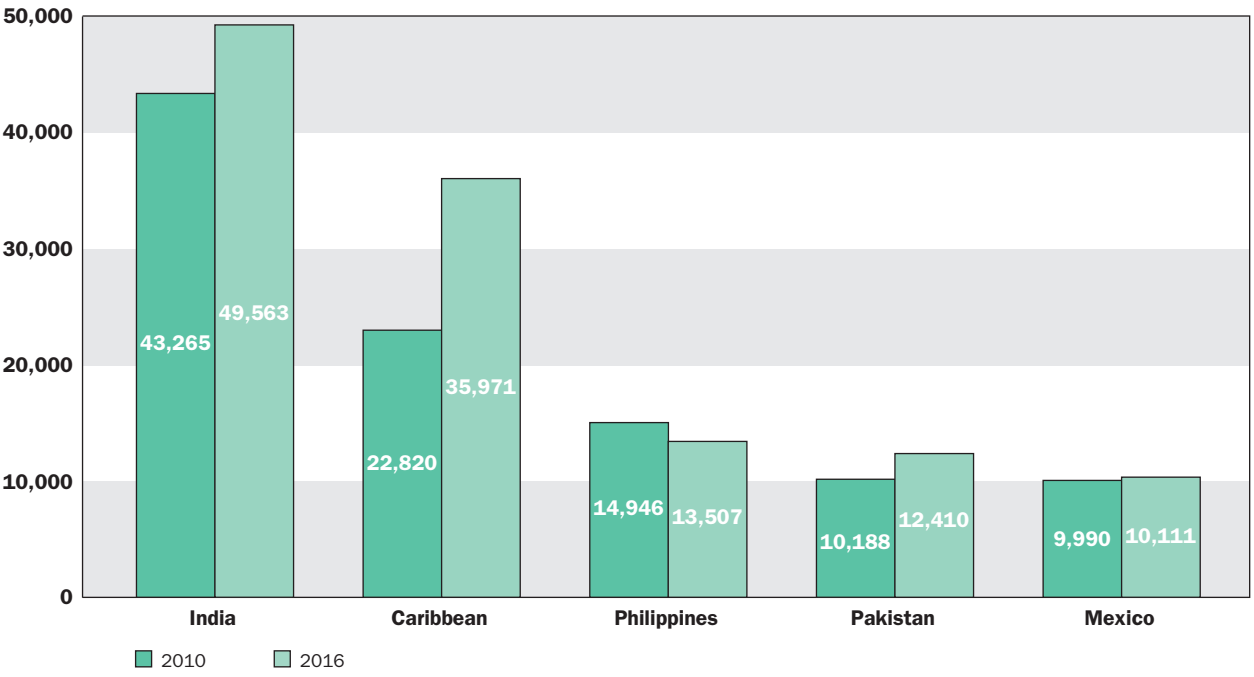
Actively Licensed Physicians in the United States and the District of Columbia by Location of Medical School Graduation, 2016



Source: 2016 FSMB Census of Licensed Physicians.

Figure 3

Locations with the Largest Number of Actively Licensed IMGs in the United States and the District of Columbia, 2010 and 2016



Source: 2016 FSMB Census of Licensed Physicians.

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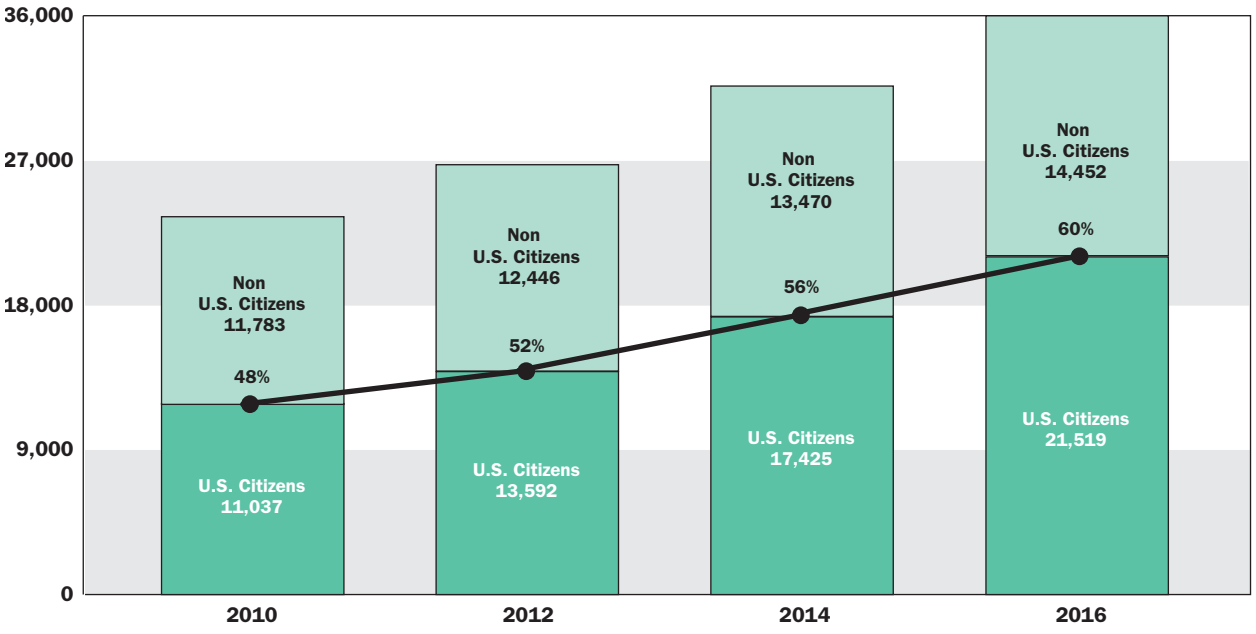
As the number of actively licensed physicians in the United States who graduated from Caribbean medical schools continues to grow, the percentage of physicians from this region who are U.S. citizens has also steadily increased from 2010 to 2016. In 2010, 48% of actively licensed physicians who were Caribbean medical school graduates were U.S. citizens; in 2016, this percentage has grown to 60%. Alternatively stated, in 2010, there were 11,783 actively licensed physicians who were non-U.S. citizen Caribbean medical graduates, a number that has grown to 14,452 in 2016 (an increase of 23%). In 2010, there were 11,037 actively licensed physicians who were U.S. citizen Caribbean medical graduates and in 2016 there are 21,519 of them—an increase of 95% (Figure 4).

Actively licensed physicians in 2016 are on average 51.3 years old (SD = 13.6 years), compared to an average physician age of 50.7 years in 2010 (SD = 13.2 years). Figure 5 shows that the percentage of physicians who are 60 years of age or older continues to grow—from 25% of the actively licensed physician population in 2010 to 29% in 2016. Between 2010 and 2016, actively licensed physicians who are 60 years of age and older increased by 30%, compared to 10% for physicians 49 years or younger. Differences in average age by degree, Caribbean medical graduates and gender exist. Actively licensed DOs tend to be younger (46.0 years, SD = 12.5 years) than MDs (51.7 years, SD = 13.6 years). Actively licensed physicians who graduated from Caribbean medical schools on average are also younger (44.9 years, SD = 11.9 years) compared to all physicians. The female physician population tends to be younger (46.4 years, SD = 11.6 years) than the male physician population (53.7 years, SD = 13.7 years).

...THE PERCENTAGE OF PHYSICIANS WHO ARE 60 YEARS OF AGE OR OLDER CONTINUES TO GROW — FROM 25% OF THE ACTIVELY LICENSED PHYSICIAN POPULATION IN 2010 TO 29% IN 2016.

ACTIVELY LICENSED PHYSICIANS WHO GRADUATED FROM CARIBBEAN MEDICAL SCHOOLS ON AVERAGE ARE YOUNGER COMPARED TO ALL PHYSICIANS.

Figure 4
U.S. Citizenship for Actively Licensed Caribbean Medical School Graduates in the United States and District of Columbia by Year



Source: 2016 FSMB Census of Licensed Physicians.

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Males constitute 65% of actively licensed physicians in 2016, females constitute 34%, and almost 2% of physicians are of an unknown gender because the information was not available to the FSMB (Table 1). From 2010 to 2016, the number of actively licensed female physicians increased by 26%, compared to 6% for male physicians.

THE DISTRIBUTION OF PHYSICIANS BY GENDER VARIES CONSIDERABLY BY AGE CATEGORIES; A GREATER PERCENTAGE OF FEMALE PHYSICIANS TEND TO FALL WITHIN YOUNGER AGE CATEGORIES THAN MALE PHYSICIANS.

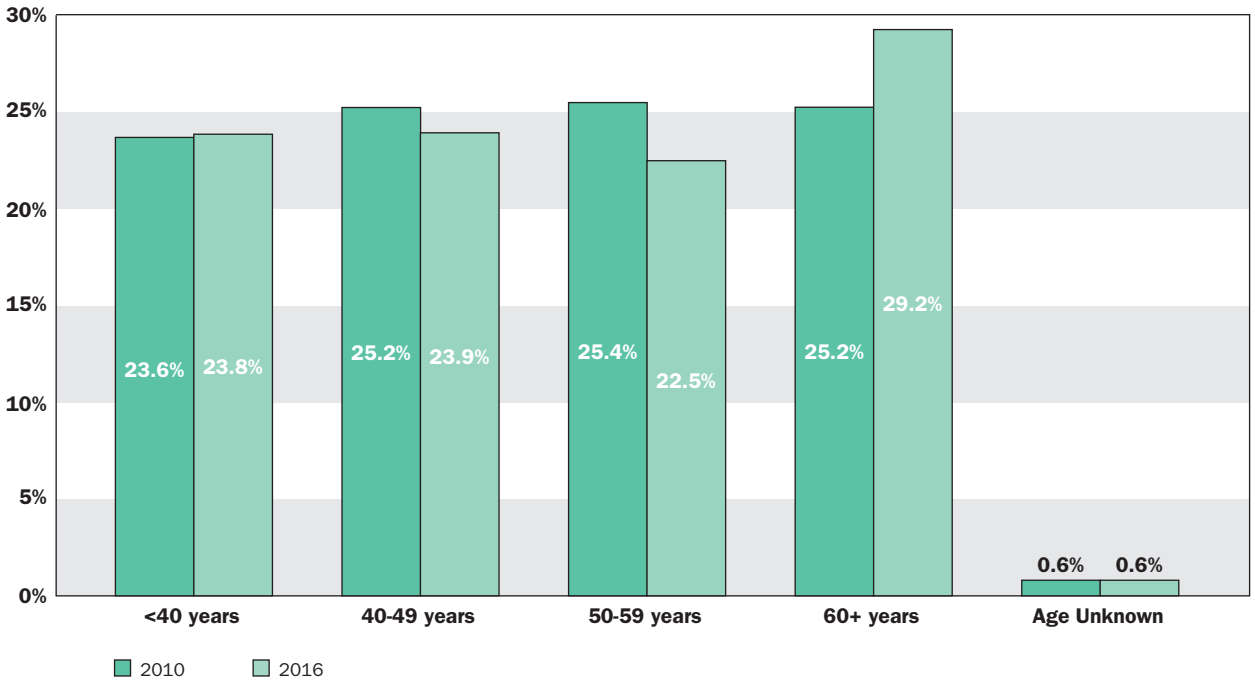
The distribution of physicians by gender varies considerably by age categories; a greater percentage of female physicians tend to fall within younger age categories than male physicians. The 2016 census shows that 34% of female physicians are 39 years of age or younger, compared to 19% of male physicians. When looking at older physicians, however, 36% of male physicians are 60 years of age or older, compared to 16% of female physicians (Figure 6).

The large majority (79%) of actively licensed physicians in the United States are certified by an ABMS or AOA specialty board (Table 1). Specialty certification varies greatly by age: 14% of actively licensed physicians who are less than 30 years old have an ABMS or AOA certification, rising to 75% for physicians 30 to 39 years old, peaking at 89% for physicians 40 to 49 years old and then decreasing to 61% for physicians 70 years of age and older (Figure 7). USMGs are slightly more likely (79%) to hold an ABMS or AOA certification than IMGs (76%).

IN BOTH 2010 AND 2016, 78% OF PHYSICIANS HELD ONE ACTIVE MEDICAL LICENSE, 16% HELD TWO LICENSES AND 6% HELD THREE OR MORE ACTIVE LICENSES.

In both 2010 and 2016, 78% of physicians held one active medical license, 16% held two licenses and 6% held three or more active licenses (Table 1). Six physicians had an active license in all 50 states

Figure 5
Actively Licensed Physicians in the United States and the District of Columbia by Age, 2010 and 2016



Source: 2016 FSMB Census of Licensed Physicians.

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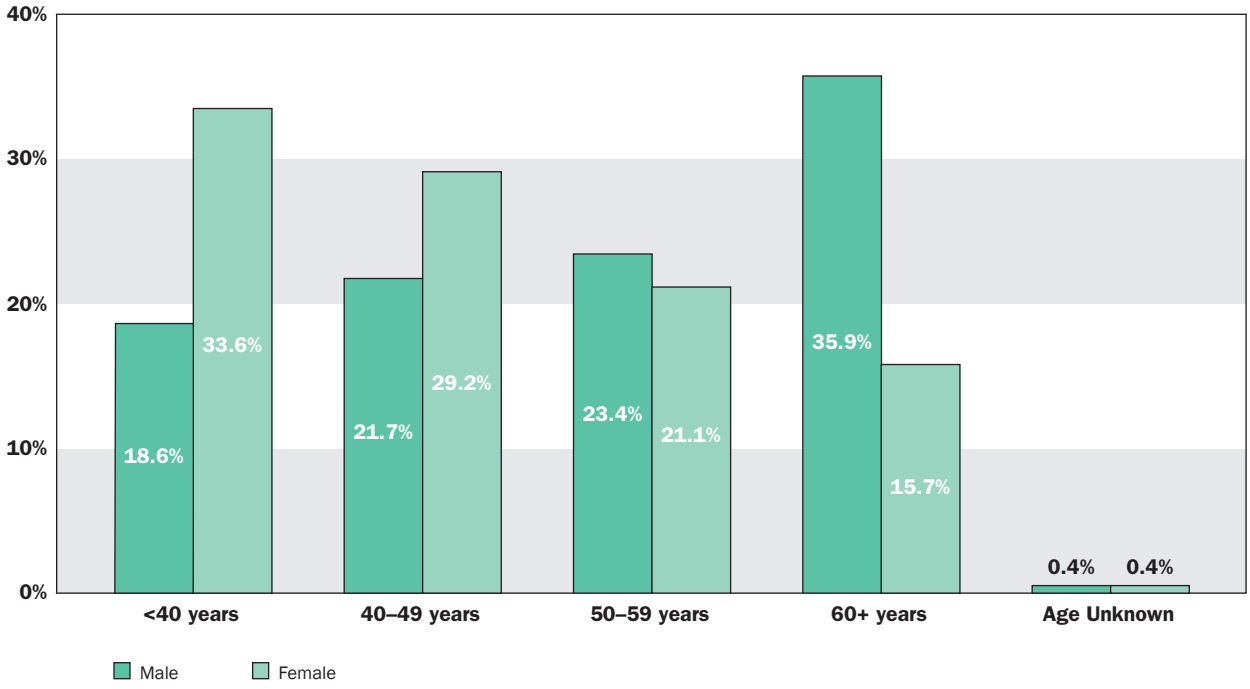
Figure 6

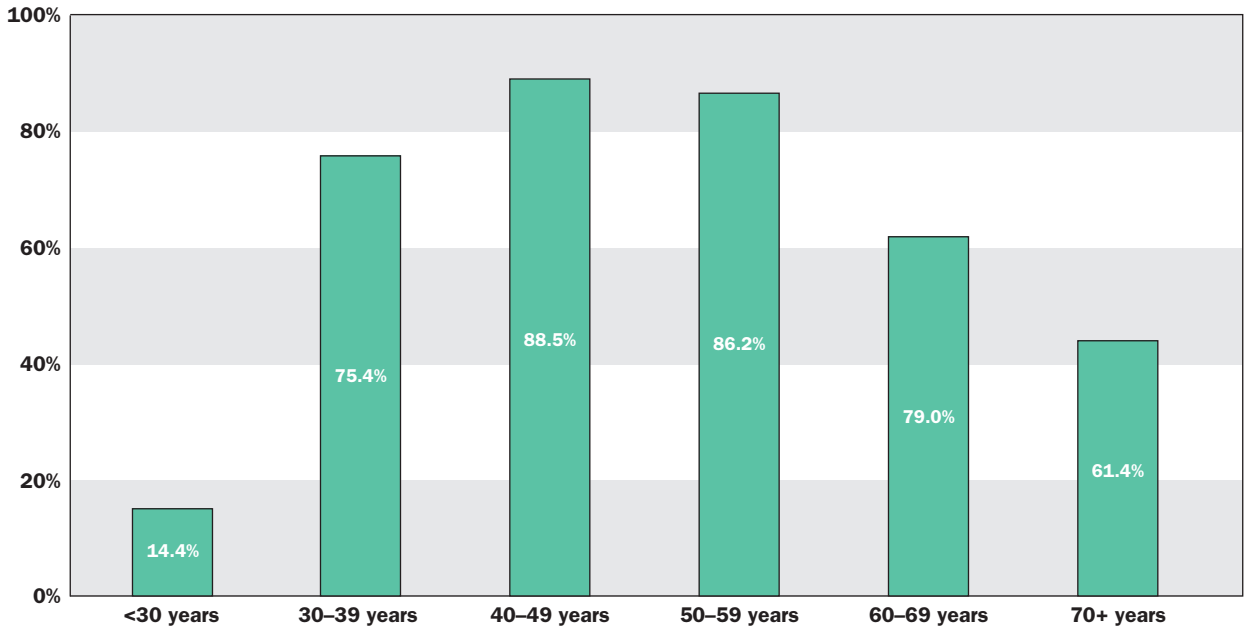
Actively Licensed Physicians in the United States and the District of Columbia by Gender and Age, 2016



Source: 2016 FSMB Census of Licensed Physicians.

Figure 7

Actively Licensed Physicians with ABMS or AOA Certifications in the United States and District of Columbia by Age, 2016



Source: 2016 FSMB Census of Licensed Physicians.

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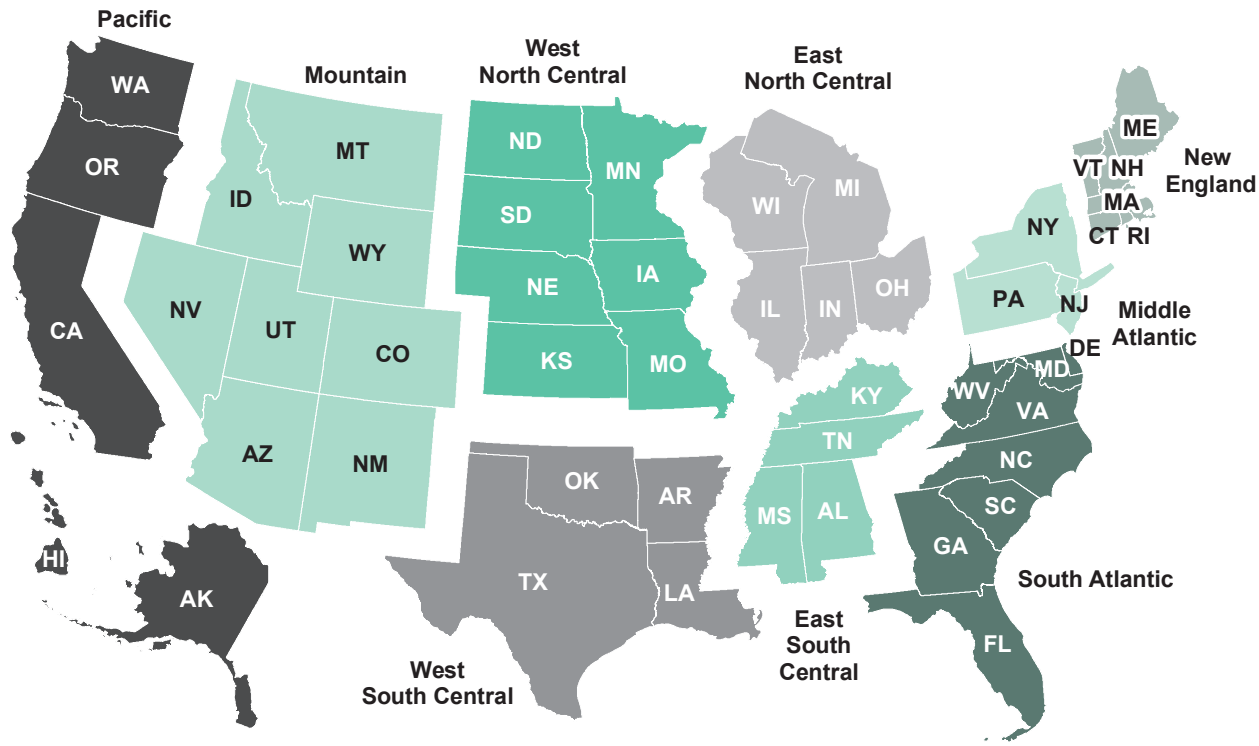
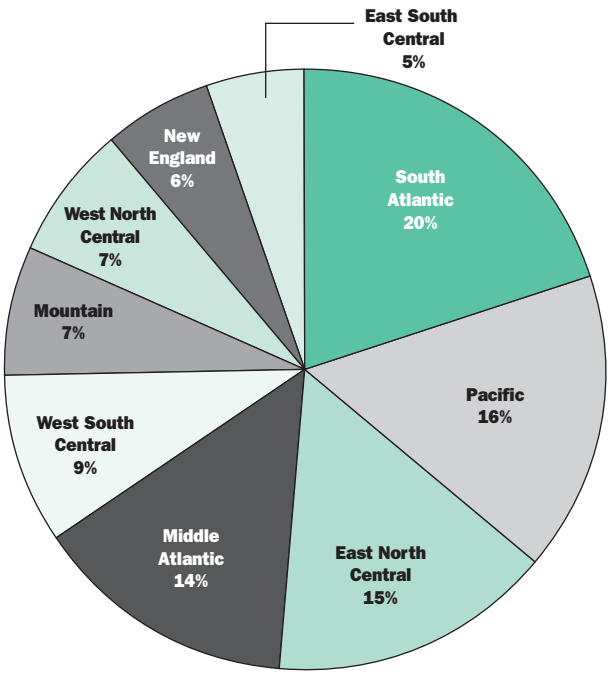
Figure 8
Divisions of the United States; U.S. Census Bureau



Source: 2016 FSMB Census of Licensed Physicians.

Figure 9
Distribution of Active Licenses in the United States and the District of Columbia by U.S. Census Bureau Division, 2016



Source: 2016 FSMB Census of Licensed Physicians.

as well as the District of Columbia in 2016. There are, however, differences in the percentage of physicians who hold multiple active licenses by gender and specialty certification. A greater percentage of male physicians tend to hold more than one active license (24%) than female physicians (19%). Physicians with an ABMS or AOA certification are also more likely to hold more than one active license (24%) than physicians without such a certification (15%).

PHYSICIANS WITH AN ABMS OR AOA CERTIFICATION ARE ALSO MORE LIKELY TO HOLD MORE THAN ONE ACTIVE LICENSE (24%) THAN PHYSICIANS WITHOUT SUCH A CERTIFICATION (15%).

Figure 8 is a map of the United States divided into the nine geographic divisions used by the U.S. Census Bureau. Using these same divisions, Figure 9 shows the distributions of all active licenses held by the 953,695 physicians in the United States. The largest percentage of all active licenses issued are

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Table 4
Physicians with an Active License by State

Physicians with an Active License by State and the District of Columbia, 2016[a]	Licensed Physicians	Population Counts[b]	Physicians Per 100,000 Population
United States	953,695	323,127,513	295
Alabama	15,947	4,863,300	328
Alaska	4,049	741,894	546
Arizona	25,344	6,931,071	366
Arkansas	9,967	2,988,248	334
California	149,283	39,250,017	380
Colorado	21,897	5,540,545	395
Connecticut	17,414	3,576,452	487
Delaware	5,269	952,065	553
District of Columbia	12,520	681,170	1,838
Florida	74,012	20,612,439	359
Georgia	35,951	10,310,371	349
Hawaii	9,464	1,428,557	662
Idaho	5,969	1,683,140	355
Illinois	49,513	12,801,539	387
Indiana	28,251	6,633,053	426
Iowa	11,931	3,134,693	381
Kansas	9,566	2,907,289	329
Kentucky	18,526	4,436,974	418
Louisiana	16,894	4,681,666	361
Maine	6,779	1,331,479	509
Maryland	30,188	6,016,447	502
Massachusetts	34,847	6,811,779	512
Michigan	47,284	9,928,300	476
Minnesota	23,494	5,519,952	426
Mississippi	10,249	2,988,726	343
Missouri	25,763	6,093,000	423
Montana	5,244	1,042,520	503
Nebraska	9,316	1,907,116	488
Nevada	8,861	2,940,058	301
New Hampshire	7,262	1,334,795	544
New Jersey	37,181	8,944,469	416
New Mexico	9,235	2,081,015	444
New York	93,951	19,745,289	476
North Carolina	38,716	10,146,788	382
North Dakota	3,895	757,952	514
Ohio	46,631	11,614,373	401
Oklahoma	13,141	3,923,561	335
Oregon	15,165	4,093,465	370
Pennsylvania	56,337	12,784,227	441
Rhode Island	5,432	1,056,426	514
South Carolina	18,999	4,961,119	383
South Dakota	3,806	865,454	440
Tennessee	23,039	6,651,194	346
Texas	77,894	27,862,596	280
Utah	10,751	3,051,217	352
Vermont	3,540	624,594	567
Virginia	37,820	8,411,808	450
Washington	28,747	7,288,000	394
West Virginia	7,943	1,831,102	434
Wisconsin	26,755	5,778,708	463
Wyoming	3,775	585,501	645
State and D.C. Totals[c]	**1,293,807**	**323,127,513**	

a. State counts are based on physician data recorded by the FSMB using state medical board license files from 2016 and reflect the number of physicians with an active license. Resident physician licenses were excluded when such license could be identified.

b. U.S. Census Bureau, Population Division, July 2016.

c. Physician counts by state do not add up to 953,695 because some physicians maintain active licenses in more than one jurisdiction.

Source: 2016 FSMB Census of Licensed Physicians.

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in the South Atlantic (20%), followed by the Pacific (16%), East North Central (15%) and Middle Atlantic (14%). These four divisions account for almost two-thirds of all active licenses in 2016.

Table 4 provides the number of physicians with active licenses by each state within the United States. The 953,695 actively licensed physicians in 2016 represent a physician-to-population ratio of 295 actively licensed physicians per 100,000-population, a steady increase from the 277 physicians per 100,000 in 2010[5], 280 physicians per 100,000 in 2012[21] and 287 physicians per 100,000 in 2014.[22]

Discussion

At a time when the United States faces a transformation in population demographics, medical regulatory policies and health care reform, an up-to-date, accurate count and detailed analysis of physicians who are licensed to practice medicine provides essential information to support health care workforce planning and public policy deliberations.

...THE ACTIVELY LICENSED PHYSICIAN-TO-POPULATION RATIO HAS INCREASED OVER TIME FROM 277 PHYSICIANS PER 100,000-POPULATION IN 2010 TO 295 PHYSICIANS PER 100,000-POPULATION IN 2016.

The 2016 FSMB census adds to the body of physician and health care workforce literature by not only documenting the overall growth of the actively licensed physician population, but also by identifying dominant physician characteristics and growing sub-populations for the profession.

First, the FSMB's four physician censuses clearly show an actively licensed physician population in the United States and District of Columbia that is growing. From 2010 to 2016, the total number of actively licensed physicians has increased from 850,085 to 953,695—an average annual net growth rate of 2%. Accordingly, the actively licensed physician-to-population ratio has increased over time from 277 physicians per 100,000-population[5] in 2010 to 295 physicians per 100,000-population in 2016.

Second, physicians who are MDs, USMGs, older and male remained a foremost presence in the actively licensed physician workforce between 2010 and 2016. More than 90% of actively licensed physicians during this time period have been MDs, compared to DOs. USMGs have remained relatively constant, constituting approximately three-quarters of the actively licensed population during this time span. In 2010, 25% of actively licensed physicians were 60 years of age or older, a percentage that has increased to 29% by 2016. Males continue to represent the majority of actively licensed physicians, although in relative terms their percentage has decreased from 69% in 2010 to 65% in 2016.

OSTEOPATHIC MEDICINE REMAINS ONE OF THE FASTEST GROWING HEALTH CARE PROFESSIONS IN THE UNITED STATES AND THE INCREASE IN THE OSTEOPATHIC POPULATION IS EVEN LARGER WHEN COMPARED WITH WORKFORCE COUNTS FROM PREVIOUS YEARS.

Third, while they still represent smaller sub-populations, some of the fastest growing segments among actively licensed physicians are females, DOs and Caribbean medical school graduates. There has been a steady increase in the percentage of actively licensed female physicians. In 2010, 30% were female, rising to 34% in 2016. The increase in the number of female physicians coincides with the steady rise of first-time medical licenses issued to female physicians in past decades,[24] as well as a greater percentage of female physicians graduating from U.S. medical schools. Between 2012 and 2016, the percentage of graduates from U.S. medical schools who were females ranged between 46% and 48%.[25]

Congruently, actively licensed physicians who are DOs grew in number by 39% between 2010 and 2016, compared to 10% for MDs. Osteopathic medicine remains one of the fastest growing health care professions in the United States and the increase in the osteopathic physician population is even larger when compared with workforce counts from previous years. According to the American Osteopathic Association (AOA), the number of DOs has increased by 65% since 2006 and 276% since 1986.[26]

Actively licensed physicians who are Caribbean medical school graduates have increased dramatically in the United States, by 58% between 2010 and

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2016. A greater percentage of Caribbean medical graduates are also listed as U.S. citizens. Between 2010 and 2016, actively licensed Caribbean medical graduates who are U.S. citizens increased by 95%, compared with a 23% increase for non-U.S. citizens. The 2016 census shows that three-fifths of Caribbean medical graduates who were actively licensed in the United States are U.S. citizens. Not only are there more U.S. citizen Caribbean medical graduates practicing medicine in the United States, a high percentage of IMGs are also now U.S. citizens. In 2015, U.S. citizens represented the single largest (31%) country of citizenship who were issued certificates by the Educational Commission for Foreign Medical Graduates (ECFMG).[27] These certificates are required for IMGs to take the USMLE examination, enter U.S. graduate medical education (GME) and become eligible for an unrestricted state medical license.

While the aging physician population remains a concern in terms of health care supply, some of the fastest growing segments of the physician population in the United States — including females, DOs and Caribbean medical graduates — tend to be younger compared to the overall physician population. While the average age for the total actively licensed physician population is 51 years old, it is considerably lower for DOs, Caribbean medical graduates and females, who average between 45 and 46 years old. It is a point of further interest to track how the average ages of females, DOs and Caribbean medical graduates may affect the composition of the overall licensed physician population in the years to come.

WHILE THE AGING PHYSICIAN POPULATION REMAINS A CONCERN IN TERMS OF HEALTH CARE SUPPLY, SOME OF THE FASTEST GROWING SEGMENTS OF THE PHYSICIAN POPULATION IN THE UNITED STATES...TEND TO BE YOUNGER COMPARED TO THE OVERALL PHYSICIAN POPULATION.

Despite the rise in the number of medical school students in the United States[3,4] and growth in the actively licensed physician population, concerns persist over an impending physician shortage as the nation's population continues to grow and age.[11,12] Though the vast majority of physicians (78%) hold only one active license, emerging innovations for health care delivery, such as telemedicine and the implementation of the Interstate Medical Licensure Compact (IMLC),[15] are providing new opportunities for qualified physicians to apply for medical licenses and treat patients (either in person or with technology) in multiple jurisdictions. Future FSMB census reports will continue to play an important role in tracking the number of licensed physicians and physician-to-population ratios as indicators of the degree of the physician shortage facing the country. Census reports are also helpful in monitoring the impact of such advances as the IMLC and in determining whether a greater proportion of physicians will choose to be licensed in more than one jurisdiction over time.

THE 2016 CENSUS SHOWS THAT THREE-FIFTHS OF CARIBBEAN MEDICAL GRADUATES WHO WERE ACTIVELY LICENSED IN THE UNITED STATES ARE U.S. CITIZENS.

Furthermore, there are additional opportunities to make detailed comparisons of various segments of the licensed physician population. A recent study by researchers at the FSMB examined first-time licenses issued to female physicians to better understand the physician pipeline and physicians' transition from medical school to practice.[24] Forthcoming analyses that explore demographic, practice and license characteristics within specific physician subgroups should also help further define and identify changes to the composition of the health care workforce. ■

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Quality Assurance and Maintenance of Competence Assessment Mechanisms in the Professions:
A Multi-Jurisdictional, Multi-Professional Review

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ABSTRACT: Regulatory bodies of health and non-health professions around the world have developed a diverse array of mechanisms to ensure maintenance of competence of practitioners. Quality assurance of professionals' practices is crucial to the work of regulators, yet there are few examples of interprofessional or cross-jurisdictional comparisons of approaches and mechanisms used to achieve this important objective. This review was undertaken using an indicative sampling method: to control for local cultural factors, all regulated health- and non-health professions in a single jurisdiction (Ontario, Canada) were studied, while intra-jurisdictional comparison was facilitated through targeted study of large professions (such as medicine, pharmacy and teaching) in other English-language jurisdictions (such as California, USA; the United Kingdom and Australia). A total of 91 regulated professions were examined to identify trends, commonalities and differences related to approaches used for professional quality assurance and maintenance of competence assessment. A diverse array of approaches was identified, highlighting divergent approaches to defining and measuring competency in the professions. Further comparative work examining this issue is required to help identify best- and promising-practices that can be shared among regulators from different jurisdictions and professions.

Background

Regulated professionals around the world are entrusted with the responsibility of providing their specialized services to members of the public with the highest possible degree of care and quality, often across careers that span several decades. Successful completion of formal training, entry-to-practice examinations, and in-service requirements are intended to ensure that these professionals are — at the start of this decades-long career — able to demonstrate baseline competencies. In the context of today's rapidly evolving knowledge and advancing technology, this emphasis on start-up competence assessment at entry-to-practice is increasingly being called into question.[1] This may be particularly important in the health professions: It has been stated that medical knowledge in the first part of the 21st century has a half-life of as little as five years.[2] This suggests that not only is continuing professional development a necessity to ensure ongoing competency in professional practice — it is actually the longest, and most important, part of the educational process itself.[3] This reality, within a context of accountability mandating use of standardized mechanisms for measurement and public reporting to provide the public with reassurance regarding professionals' ongoing competence — has highlighted the importance of regulators' work in a significant way.

In an effort to reconcile these various forces, regulatory bodies around the world have developed different models and methods for continuing professional development and implemented diverse strategies for assessing ongoing competence of professionals engaged in practice. Regardless of the highly variable scopes of practice of different professions, or unique geopolitical or local-cultural contexts, the goal of these mandates is generally quite aligned: to ensure professionals are engaged in a process of life-long learning so that, at all stages of their careers, they continue to possess the knowledge, skills, and judgment necessary to competently practice their profession, thus ultimately ensuring protection of the public.[4,5,6]

...NOT ONLY IS CONTINUING PROFESSIONAL DEVELOPMENT A NECESSITY TO ENSURE ONGOING COMPETENCY IN PROFESSIONAL PRACTICE — IT IS ACTUALLY THE LONGEST, AND MOST IMPORTANT, PART OF THE EDUCATIONAL PROCESS ITSELF.

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Despite this common objective behind professional quality assurance, great variation exists in the diverse systems in place across the professions globally, and across jurisdictions within each profession. This may be attributed to the complex interplay of many factors, including differences in professional regulatory legislation, interpretation of emerging evidence, regulatory body resources and capacity, specific professional culture and values, and inconsistent interpretations of what actually constitutes "professional competence."[7] Further, the absence of evidence regarding the actual value and impact of traditional continuing medical education (CME) models for maintenance of competency may raise questions of legitimacy and effectiveness of regulators' work.[7]

In this complex network, public confidence in the systems that are in place to achieve this objective is essential.[8,9] This complexity, however, has led some regulators to avoid direct interprofessional or intra-jurisdictional comparisons to identify promising or best practices around quality assurance and competency assessment,[10] arguing that apples-to-apples comparisons are not possible and apples-to-oranges comparisons are not helpful. While such comparisons may not produce actionable outcomes immediately, we believe there is value in such research to provide all stakeholders with a broader context for consideration of quality improvements that may be possible or desirable in the area of professional quality assurance and competency assessment.

Objectives

The objective of this review was to characterize quality assurance and competency assessment systems (and their constituent components) that are being used across professions and jurisdictions with respect to:

- Evidence to support efficacy.
- Perceived and demonstrated benefits.
- Perceived and demonstrated limitations.

Method

Given the overwhelming potential scope and breadth that is possible for such research, a framing mechanism for indicative sampling was required to allow this work to proceed in a time- and cost-efficient manner. As a means of generating a broad picture of the diverse array of professional quality assurance systems that exist, this review included both health and non-health professions across an array of geographic regions. All professions (whether health or non-health) are concerned with ensuring the ongoing competency of those in practice. While the specific practice context may differ because of the nature of the profession (e.g., third-party oversight, remuneration models), the need for all professions to ensure their practitioners are competent and up-to-date in terms of their knowledge and skills is important. Non-health professions may have important lessons to share with the health professions; while the specific maintenance of competency activities they undertake may or may not be directly applicable, there may be value in understanding the philosophies undergirding their approaches and this may be useful to consider within the health professions. Historically, health professions have learned much from other fields and industries (e.g., aviation safety literature has informed interprofessional collaboration research); with this research, the inclusion of non-health professions was deemed relevant to determine whether learning from these fields may also be valuable.

HISTORICALLY, HEALTH PROFESSIONS HAVE LEARNED MUCH FROM OTHER FIELDS AND INDUSTRIES (E.G., AVIATION SAFETY LITERATURE HAS INFORMED INTERPROFESSIONAL COLLABORATION RESEARCH)...

In order to control for local-cultural contexts, an in-depth examination of all regulated professions in one specific jurisdiction (Ontario, Canada) was selected to facilitate intra-jurisdictional and inter-professional comparisons (see Table 1). Jurisdiction-specific factors (including the regulatory culture of that jurisdiction, and the legal frameworks within which regulators of all professions work within that specific jurisdiction) may influence the development of maintenance of competence assessment systems that evolve; examining all regulated professions within a single, well-developed jurisdiction such as Ontario would therefore facilitate interprofessional comparisons while controlling somewhat for confounding factors such as local culture and local legislative imperatives. Due to limitations of the study team, only jurisdictions where English-language documents and English-language speaking key informants were available were selected for inclusion.

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Based on this framing, the scope of professions and geographic regions sampled for inclusion in this review included:

- Twenty-six regulated health professions in Ontario, Canada.
- Sixteen regulated non-health professions in Ontario, Canada.
- A selected scan of these professions (medicine, nursing, pharmacy, dentistry, law, teaching, and engineering) in these geographic regions: British Columbia, Canada; Massachusetts, USA; California, USA; England, UK; Qatar, Australia, and New Zealand.

A total of 42 regulated health and non-health professions in Ontario were included in this study; a total of 49 regulated health and non-health professions from seven other jurisdictions were also reviewed. Overall, this study reviewed policies and practices of 91 different regulatory bodies. Of these, 54 (26 from Ontario and 28 from other jurisdictions) were health professions, and 37 (16 from Ontario and 21 from other jurisdictions) were non-health professions.

Ontario (as a single jurisdiction) was selected due to the investigators' familiarity with its professions and processes, and because it has a robust system of documentation of professional regulation. The non-Ontario professions selected were selected as they are well-established historical professions with a large member base and consequently a readily accessible document trail across diverse jurisdictions. These geographic areas were selected primarily for ease of information gathering as all are English-speaking regions. British Columbia was selected to provide an alternative Canadian perspective to Ontario's systems.

An indicative review methodology was selected for this work given the large quantity and diverse quality of academic and grey literature sources available across the indicative sample of health and non-health professions outlined above. In an indicative review, the objective is not to undertake a statistically representative sampling process, but instead to identify major themes that are highlighted throughout the sample frame of interest. Grey literature—in particular websites of professional regulatory bodies and associations—was a major source of information for this review. These websites were combed for information regarding quality assurance program structure, position/philosophical statements of intent, program reports, presentations, data summaries and other pertinent documents. Manual searching of documents referenced in this grey literature was conducted. To supplement these sources, multiple focused MEDLINE and Scopus database searches were also conducted. All English-language publication types, including review articles and commentaries, were deemed relevant for inclusion in this review.

Table 1
Health and Non-health Regulated Professions in Ontario, Canada as listed in the Regulated Health Professions Act (Section 1), 1991[11]

Health Professions		
Audiology and Speech Language Pathology	Kinesiology	Optician
Chiropody	Massage Therapy	Optometry
Chiropractic	Medical Laboratory Technology	Pharmacy
Dental Hygiene	Medical Radiation Technology	Physiotherapy
Dental Technology	Medicine	Psychology
Dentistry	Midwifery	Psychotherapy
Denturism	Naturopathy	Respiratory Therapy
Dietetics	Nursing	Traditional Chinese Medicine
Homeopathy	Occupational Therapy	
Non-health Professions		
Agrology	Forestry	Law
Accounting	Geoscience	Professional Engineering
Architecture	Human Resources	Social Work and Social Service Work
Aviation	Insurance	Teaching
Early Childhood Education	Land Surveying	Veterinary Medicine

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Findings and Discussion

This section is structured around the different approaches taken by health and non-health professions across different jurisdictions, with an emphasis on one jurisdiction (Ontario) in particular, as a means of controlling for local-cultural issues. Of the 91 regulatory bodies reviewed for this study, 42 (~40%) were from Ontario. For the purposes of numerical reporting, each regulatory body was equally weighted and no adjustment was made based on the scale or number of registered practitioners governed by that regulatory body.

Continuing Education/Professional Development Requirements

Across all jurisdictions and professions examined, continuing education (CE) or continuing professional development (CPD) were explicitly identified as philosophically crucial to ongoing maintenance of professional competency. All 91 regulatory bodies reviewed for this study required practitioners to engage in some form of life-long learning as a necessary pre-condition to annual renewal of registration. There was, however, significant variation amongst regulatory bodies as to what constituted acceptable or appropriate activities with a clear trend towards offering practitioners choices in identifying activities and learning methods most relevant to individual needs. Table 2 outlines the seven categories of CE/CPD that were identified through this scoping review.

Within the pool of professions and jurisdictions reviewed for this study, 56% (51/91) of regulators required that at least some portion of activities be accredited or certified with the intention of ensuring quality of the activity itself. Seventy five percent of regulatory bodies (68/91) mandated a minimum amount of activity participation, typically in the form of compulsory continuing education hours. Two specific methods for calculating continuing education credits were identified: 88% (60/68) focused on time spent on the activity (i.e., one contact hour = one CE credit). Twelve percent (8/68) used a more complex formula for calculating CE credit based on factors such as time commitment, activity type (interactive vs. didactic), degree of assessment/outcome measurement, etc. Of those 68 regulatory bodies requiring minimum mandatory continuing education, 15% (10/68) of regulators required between 1–10 measured units/year, 30% (21/68) required 11–20 units/year, 40% (27/68) required 21–30 units/year, 10% (7/68) required 41–50 units/year and 5% (3/68) required greater than 60 units/year. The median required CE units/year across professions and regulatory bodies mandating CE as a precondition for annual renewal of registration was ~25.2 units/year. In some cases, individuals were required to accumulate a minimum number of CE units over a three-year or five-year cycle.

ACROSS ALL JURISDICTIONS AND PROFESSIONS EXAMINED, CONTINUING EDUCATION (CE) OR CONTINUING PROFESSIONAL DEVELOPMENT (CPD) WERE EXPLICITLY IDENTIFIED AS PHILOSOPHICALLY CRUCIAL TO ONGOING MAINTENANCE OF PROFESSIONAL COMPETENCY.

Table 2
Categories of CE/CPD

Category	Representative Examples
Self-directed activities	Journal reading, podcasts, courses, practice guideline review and development, manuscript writing, internet searching
Group-based activities	Conferences, grand rounds, journal clubs, small group discussion, study groups, peer case reviews, root cause analyses, workshops
Didactic activities	Presentations, lectures, textbook/tertiary reference reading
Interactive activities	Role playing, simulations, preceptorship, mentorship
Assessment activities	Chart audit, simulations, 360 degree reviews, multisource feedback, examinations, multiple choice quizzes
Accredited/certified activities	Certified Diabetes Educator (CDE), Certified Asthma Educator (CAE), additional teaching qualifications (MEd), alternative dispute resolution (ADR) certification
Unaccredited/uncertified activities	Self-directed learning, observerships, job shadowing

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The strong emphasis on compulsory continuing education (especially in the health professions, regardless of jurisdiction) as an indicator of maintenance of competency across professions and jurisdictions is striking given the relatively weak evidence linking mandatory CE to maintenance of competency.[12,13] The bulk of the literature related to value and impact of continuing education or continuous professional development and maintenance of competency has been ambiguous at best.[14,15] Despite the frequent regulatory practice of mandating a required minimum number of hours or credits of continuing education, used widely across professions and jurisdictions,

MANY PROFESSIONS AND REGULATORY BODIES ARE EVOLVING TOWARDS A CPD MODEL IN WHICH PROFESSIONALS TAKE GREATER PERSONAL RESPONSIBILITY FOR THEIR OWN ONGOING DEVELOPMENT.

there is virtually no evidence available to support this practice or to establish any correlation to positive, practice-related outcomes.[16] Instead, within certain health professions at least, there is evidence that compulsory continuing education has little to no effect on professional behavioral change.[17,18,19] At least one study has noted that CE does not improve performance in incompetent individuals.[20] It is important, however, to note the limitations of this data: Although many meta-analyses and systematic reviews have been conducted, none have included funnel plots to determine if publication bias may be present.[21] Interestingly, one systematic review noted that studies were more likely to note a positive impact for CE or CPD when outcomes were measured at six months, where studies with negative findings generally measure outcomes at 12 or 18 months, suggesting the impact of CE may have poor retention over time.[18] In addition, interpretation of evidence regarding the impact of CE/CPD is extremely complex due to the high variability of activity types in use and the extraordinary individual differences at work.

Overall, the main benefit of a traditional mandatory continuing education approach as an indicator of maintenance of competency appears to be its ease of use: Compared to other more involved methods with greater complexity, resource demands or costs, this method often only constitutes collection of professional members' declarations of compliance and periodic random audits to confirm compliance. For these reasons, it appears to continue to be a favored method by regulatory bodies to demonstrate accountability to government and stakeholders, despite lack of meaningful evidence supporting this approach.

Learning Portfolios

Many professions and regulatory bodies are evolving towards a CPD model in which professionals take greater personal responsibility for their own ongoing development. Documentation of this development has been identified as a specific concern and legitimate interest of regulatory bodies, and a diverse array of tools and mechanisms have been used.[22] Variously labeled "professional portfolios," "learning portfolios," "professional development plans," or other proprietary names, these tools vary in structure, content and focus. Virtually all tools reviewed in this study were structured around adult-learning theories[23,24] involving a learning cycle beginning with self-assessment, followed by development of a personal learning plan to address identified goals or deficiencies, implementation of the plan, and reflection to evaluate outcomes of plan implementation. Diverse formats (online, paper-based, structured, unstructured) appear to be available in most jurisdictions and professions. Despite the ubiquity of these tools, no evidence or outcome analysis was found in any jurisdiction or profession supporting effectiveness or efficacy of this approach.[25,26,27,28,29,30]

While the idea of learning portfolios is built upon a sound theoretical foundation of adult and experiential learning, the self-reporting and self-disclosure inherent in the process makes evaluation of impact challenging, if not impossible.[26] While at least one study suggests that portfolio-based approaches are well accepted by professionals, and demonstrate high content and face validity, their use as a reliable indicator of competency is not consistently evident due to the heterogeneity of portfolio designs and methods of assessment.[30] A key challenge in this area relates to self-assessment capacity and honest self-appraisal by professionals. A number of studies have identified poor accuracy and validity of professionals' self-assessment skills when compared to external objective and standardized assessment methods, and the fact that this skill may be particularly underdeveloped among those who are in fact least competent.[31,32,33,34] This calls into question the appropriateness — and ultimately the effectiveness — of using unguided self-assessment and learning portfolio designs for ensuring professional competency.[35,36,37,38]

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Self-Assessment and Reflective Practice

In all 91 jurisdictions and professions examined, self-assessment, reflective practice, and life-long learning were explicitly identified by relevant regulatory authorities as crucial competencies for safe and effective professional practice. There were significant differences in approaches and requirements for demonstration of self-assessment competencies; 20% (18/91) of regulatory bodies do not provide any discernible structure, system or tools to facilitate self-assessment, while 80% (73/91) of regulatory bodies utilize a diverse array of self-audit approaches available to practitioners. The most common supports provided by regulatory bodies are online multiple-choice and case-study examination questions based on peer-derived standards with answer keys to facilitate self-reflection. Within the health professions across the jurisdictions examined, the use of guided reflection questions designed to prompt recall and deconstruction of recent clinical experiences is widely utilized. Increasingly, trigger-video recall mechanisms are being utilized, in which practitioners access a video recording of a clinical simulation and then engage in structured reflection around the practitioner-patient interaction as a mechanism for self-assessment and quality improvement.

No evidence of value or efficacy of these tools or of reflective practice/self-assessment was found within specific regulatory bodies or professions examined.[39,40] Within the health professions in particular, there is increasing evidence to challenge the notion that most practitioners actually engage in, or are capable of engaging in, authentic self-assessment.[31,39] Adult learning theory related to CPD hinges on the first part of the cycle — self assessment — and is based on the premise that

MAKING SELF-ASSESSMENT COMPULSORY, REPORTABLE, AND MEASUREABLE CHANGES THE PRACTITIONERS' RELATIONSHIP TO THE ACT ITSELF, MAKING IT A HOOP THROUGH WHICH HE OR SHE MUST JUMP...

adult practitioners are capable of self-identification of practice-related deficiencies or areas requiring improvement.[24] Within the health professions in particular, the use of unguided/unfacilitated self-assessment as a springboard for ensuring professional competence has been called into question.

Several researchers have noted a structural misalignment within the CPD philosophy between practitioners' goals and broader professional or regulatory objectives, which may inhibit public declaration of learning gaps for fear this may lead to punishment.[41,42] Further, the one-year CPD cycle favored by most regulators to align

WITHIN THE HEALTH PROFESSIONS ACROSS THE JURISDICTIONS EXAMINED, THE USE OF GUIDED REFLECTION QUESTIONS DESIGNED TO PROMPT RECALL AND DECONSTRUCTION OF RECENT CLINICAL EXPERIENCES IS WIDELY UTILIZED.

with annual renewal of registration may not — psycho-educationally — provide sufficient time for true engagement in the learning and professional development process: A two-to-five year cycle for professional development and practice change may be more realistic for busy practitioners.[27] Attempts by regulators to use self-assessment for both summative and formative purposes clouds the true objective for practitioners, which in turn taints the self-assessment process itself.[27] Making self-assessment compulsory, reportable, and measureable changes the practitioners' relationship to the act itself, making it a hoop through which he or she must jump rather than a valuable self-improvement activity.

Despite these critiques, the use of self-assessment as a cornerstone for maintenance of competency activities and reporting was widespread across the health and non-health professions. Perhaps most telling were practitioner-led blogs or chat-rooms, which noted how susceptible this activity is to faking, and the disengagement it may subsequently produce as a result.[26]

Peer and Concealed/Unconcealed Practice-based Assessment

The use of peers as agents to evaluate ongoing maintenance of competency is widely used and widely described. This collegial model of assessment typically involves direct observation of one practitioner by another practitioner, under standardized (e.g., testing) or naturalistic (e.g., in-practice) conditions, followed by some form of structured and unstructured debriefing and assessment.

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The trigger for peer or practice assessment varies based on profession and jurisdiction: Fifty percent (45/91) of regulatory bodies select participants based on a random selection of a proportion of all members using a systematic approach, the actual number typically being defined by logistics and capacity constraints rather than evidence. Eight percent (7/91) of regulatory bodies select members

UNIQUE TO THE PROFESSION OF MEDICINE ACROSS MANY JURISDICTIONS EXAMINED WAS THE INCLUSION OF SPECIFIC AGE-RELATED CRITERION FOR TRIGGERING OF PEER ASSESSMENT...

to participate in maintenance of competence assessment only in the event of practice-related concerns (e.g., complaints, disciplinary procedures, etc.), as part of an investigation process or follow-up. Forty-two percent (38/91) of regulatory bodies use a combination of both approaches. Unique to the profession of medicine across many jurisdictions examined was the inclusion of specific age-related criterion for triggering of peer assessment: In many jurisdictions, practicing physicians must undergo mandatory peer assessment/practice review at the age of 70 and at least every five years thereafter. Kinesiologists in Ontario are also unique in mandating assessments for all members who have practiced less than 1,500 hours in the preceding three years.

Two dominant frameworks for peer or practice-based assessment were identified: a single-level model or a laddered approach. The single-level model (used by 70% (64/91) of regulatory bodies in this study) stipulates that all members selected for review (whether randomly or in a targeted fashion) undergo the same or substantially similar review process. This is explicitly undertaken to demonstrate procedural fairness, regardless of practice context or personal circumstances. In a laddered approach (used by 30% (27/91) of regulatory bodies), an initial standardized assessment of all selected members is followed by further, differentiated or customized assessment steps as required for a subset of participants. These further steps are individualized for each member's unique performance, and are generally designed to probe in further detail areas of greatest concern or interest.

A wide variety of peer review assessment methods have been reported by regulatory bodies. Many regulatory bodies utilize multiple methods as part of their approach, either in a single or laddered manner:

Table 3
Peer and Practice Review Assessment Methods Used

Assessment Method	Description	Frequency of Use (%) (n=91)
CPD Portfolio Review/Audit	Fully-, semi- or unstructured review of individual member's learning portfolio	90% (82)
Practice Site Visit/Inspection	Face-to-face visit of peer assessor to the member's practice and real-time observation of practice	47% (43)
Patient chart audit/ Chart-stimulated recall	Use of clinical documentation to facilitate discussion regarding standards of professional practiced and care provided	42% (38)
Examination	Use of case-based, multiple-choice or other standardized testing mechanisms	25% (23)
Multi-source feedback/ 360-degree reviews	Compilation of diverse stakeholder/co-worker feedback on member's performance to facilitate dialogue and reflection	23% (22)
Clinical simulation or objective structured clinical examination	Use of standardized patients/clients or simulators as a tool to simulate real-world practice to evaluate core competencies	15% (13)
Direct Observation in Practice	Use of "secret shoppers" or other concealed client/ patient visits to observe real-world interactions	4% (4)
Other	Random spot-check/audit, managerial review, performance appraisal, quantitative peer benchmarking, etc.	4% (4)

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As many of these methods have a psychometric foundation and utilize measurement approaches, there is a growing literature and evidence to support their use (to a greater or lesser degree) in providing assurance of maintenance of competence.[43,44,45,46] Significant emphasis on training of peer reviewers/inspectors and standardization of expectations contributes positively to reliability and validity of assessments.[46,47] Use of structured assessment forms and rubrics in both this training process and in the actual peer-to-peer visit is also important for the defensibility of the process.[46,47] While each profession and jurisdiction must customize assessment forms to unique local-cultural needs, the existence of an agreed upon structure for peer-led assessment enhances feasibility of implementation of such programs.

A significant critique of this standardization approach relates to the issue of checklist-driven practice: Reducing the complex and nuanced work of a professional into a convenient 1–2 page checklist-driven form negates the true meaning of professional practice.[48,49,50] Further, as the process itself becomes more widespread within a profession, the checklist itself *becomes* professional practice, and practitioners begin to adapt their highly individualized and contextualized practices to a generic standard.[51] There is some emerging evidence to suggest such approaches may also punish or inadequately measure the performance of the true experts and leaders in practice;[51,52] in some cases, some practitioners may truly be without (local) peers who can fairly assess their practice.[53]

Within the profession of medicine across all jurisdictions studied, the use of multi-source feedback (360-degree reviews) has been growing;[56,57,58,59] in other professions and fields there are also reported attempts at implementation of this form for quality assurance.[60] Multisource feedback — when appropriately implemented with trained facilitators and practitioners — demonstrates sufficient psychometric reliability, validity, and generalizability to be a prominent component of a quality assurance process.[56,57,58] The selection of a context-specific, validated multisource feedback instrument is crucial.[56,57] Within medicine (where this has been studied most robustly), acceptable generalizability of findings appears when responses are collected from 25–35 clients and 8–15 colleagues and coworkers. There is considerable variation in impact and outcome associated with multisource feedback: 40–70% of practitioners report any inclination to change their behavior or practice upon receipt of feedback, while 25–55% self-report actual implementation of change based on receipt of feedback. Facilitated feedback, and ongoing coaching/mentoring appear crucial to the success of multisource feedback in facilitating practice change.[61,62,63,64,65,66] Of course, such systems are extraordinarily costly, time-consuming, and logistically challenging. Areas reported to be most amenable to change following multisource feedback include communication with clients and colleagues.[67,68] Multisource feedback has been promoted as serving a dual role in professional quality assurance — as an assessment of professional competency based on norm-referenced standards, and as a method to contextualize individual continuing professional development needs to ultimately stimulate behavior or practice change.[62,63,66] Concerns have been expressed regarding the capacity of multisource feedback to actually evaluate all critical competencies of a professional: A client is not likely to fully grasp and appropriately rate a practitioner's technical skills or clinical knowledge, while a colleague may not accurately evaluate a peer's record-keeping practices.[67] While to some degree this issue can be mitigated by expanding the circle of stakeholders involved in multisource feedback, time, resource and logistics constraints in reality often mean this simply is not possible.

REDUCING THE COMPLEX AND NUANCED WORK OF A PROFESSIONAL INTO A CONVENIENT 1–2 PAGE CHECKLIST-DRIVEN FORM NEGATES THE TRUE MEANING OF PROFESSIONAL PRACTICE.

Direct observation models of quality assurance can take different forms, ranging from concealed observation, in which practitioners are unaware they are being observed (e.g., mystery shopper methods used in pharmacy in some jurisdictions, to unconcealed observation of real-world practice or standardized competence assessment using objective structured clinical examinations (OSCEs). Across professions and jurisdictions in this study, there are many different variations of direct observation used by regulatory bodies to assess maintenance of competence of practitioners.

Psychometricians consider direct observation to be a valuable tool with good content validity;[69,70,71] concealed — or "mystery shopper" — observation (though perhaps ethically questionable) is thought

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to demonstrate even greater fidelity to actual performance as it enables assessors to evaluate what a professional does in day-to-day practice without the confounding impact of the Hawthorne effect.[72,73,74] Concealed assessment of real-world practice has been described as the "gold standard" of quality assurance in the professions.[72] From a regulatory perspective, however, concealed assessment poses extraordinary challenges and risks, particularly from the perspective of the relationship between regulator and practitioner. For many practitioners, such a practice raises concerns of authoritarian surveillance, and sets up an inherently antagonistic relationship between professional and regulator. The notion of being "spied on" in practice can be very anxiety provoking, despite psychometric evidence as to its value and impact.[73] The stress and harm this can produce has severely limited use of "mystery shoppers" within regulated professions, despite the widespread use of such techniques in investigative journalism/reporting of professionals. The Pharmacy Guild of Australia has arguably the most highly developed concealed observation program, in which pharmacists' clinical and customer service performances are evaluated.[72,73,74] Scenarios for this process are developed through a multi-stakeholder process (including pharmacists, clients, other health professionals), mystery shoppers are well-trained professional actors capable of reliably portraying their scenario on multiple occasions and responding in semi-standardized fashion to the flow of interaction with the unsuspecting pharmacist, all interactions are secretly video-recorded, and assessment is undertaken externally using validated assessment instruments.[75,76,77]

A KEY FINDING FROM THIS STUDY IS THE NOTION THAT NO ONE-SIZE FITS ALL... THERE IS NO SINGLE 'GOLD STANDARD' QUALITY ASSURANCE MECHANISM.

Unconcealed direct observation has been most widely studied in the context of students and trainees in most professions, rather than with practicing professionals.[78,79] A strong emphasis in this approach is on the design of psychometrically defensible global/holistic scales and analytical checklists that can be used to standardize the assessment process.[80,81] Commonly assessed skills are history-taking, communication skills, technical skills of the profession, counseling practices, negotiation and conflict management.[78,79,81] Unconcealed direct observation can be standardized or un-standardized: Standardized processes utilize traditional testing methods (e.g., multiple choice case-based tests of knowledge or simulations such as OSCEs or objective structured clinical examinations).[78,79,81] Health professions are — in general — much further advanced in these areas than the non-health professions examined in this study, though several non-health professions (notably law and teaching) have highlighted interest in these approaches. Unstandardized or naturalistic processes involve use of standardized assessment tools but within a real-world, context-sensitive practice. This approach has been criticized for not being capable of actually facilitating comparisons within a cohort of professionals: If the observer happens (through random luck) to arrive on a terrible or busy day, the practitioner may be disadvantaged.[78,80]

Summary

As described in this study, there is a plethora of different methods and models used by regulatory bodies across professions and jurisdictions in the name of "quality assurance." A key finding from this study is the notion that no one-size fits all; not only does each profession use or require a unique model, professions within the same jurisdiction also use or require their own unique model. Thus, there is no single "gold standard" quality assurance mechanism to ensure maintenance of competence of practitioners.

In large part, the choice of a specific method or model seems to be driven by the regulators' need to balance sometimes-conflicting duties to the general public and the professionals whom they govern. For example, the strongest consequential validity evidence for a quality assurance mechanism that exists is for concealed direct assessment of practitioners,[77] yet it is only used by one profession in one jurisdiction and even then is extraordinarily challenging. One strongly worded blog post from a pharmacist in Australia stated he would feel "professionally violated" if he were ever involved in such an interaction, and this very strong emotional response to the process continues to make implementation or spread of the method almost impossible, and continuously threatens the viability/existence of the model in Australia.[75]

This balance regulators face is further complicated by real world exigencies of cost, time, resource, and logistics. As a result, the vast majority of regulatory

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bodies in this study appear to have opted for quality assurance mechanisms that may be easily implemented, conceptually simple to grasp, and possess some measure of face-validity — for example mandatory continuing education hours, or maintenance and audit of a learning portfolio. Unfortunately, the evidence to support the value of such methods in terms of practice improvement or maintenance of competency is sparse. Where more sophisticated and defensible competency assessment methods have been used — for example, unconcealed direct observation or chart-stimulated recall — there is a strong need to ensure psychometric rigor of the process. This requires investment in training of peers and practitioners, development and validation of high-quality and defensible assessment tools, mechanisms for one-on-one observation that are time-consuming and costly. Other methods — such as multi-source feedback — have the potential to demonstrate consequential validity but require investments in ongoing coaching and mentoring that are generally beyond the resources — or remit — of regulatory bodies.

Perhaps uncomfortably, this research has highlighted the widespread use of quality assurance mechanisms across professions and jurisdictions that may not be of any particular value or impact in achieving the stated objective of ensuring maintenance of competence and safe and effective professional practice. While the mechanisms themselves — such as continuing education — do require time and effort, and may, on the face of it appear to be meaningful — the actual evidence supporting their value is scant at best. This is a significant challenge to regulators: While it is of course important to be seen to be ensuring maintenance of competence of practitioners, this activity should actually have this effect in reality. Currently, as highlighted in this study, the bulk of activities used across a broad swath of professions worldwide do not appear to be as meaningful as regulators may wish them to be — or as the general public may expect them to be.

HONEST SELF-APPRAISAL BY REGULATORS — AND THE PUBLIC THEY SERVE — IS ESSENTIAL IN ORDER TO MANAGE EXPECTATIONS AS TO WHAT REGULATORS AND QUALITY ASSURANCE MECHANISMS CAN ACTUALLY ACCOMPLISH.

Ultimately, the tension between psychometrics and practicality, or between practitioner acceptability and public accountability, will not be easily addressed. As highlighted in this study, there can be no one-size fits all solution to the quality-assurance conundrum. Increasingly, regulatory bodies (particularly in health professions) have noted the value of multiple methods at multiple times as a more feasible and effective approach to quality assurance.[82] Ongoing work to evaluate these more complex and evolving models is required. A particular strength of the approach used in this work is the use of a structure/process/outcome approach to evidence initially proposed by Donabedian,[83] highlighting the importance of data and evidence to support conclusions regarding program quality.

INCREASINGLY, REGULATORY BODIES (PARTICULARLY IN HEALTH PROFESSIONS) HAVE NOTED THE VALUE OF MULTIPLE METHODS AT MULTIPLE TIMES AS A MORE FEASIBLE AND EFFECTIVE APPROACH TO QUALITY ASSURANCE.

Conclusions

This study was initially undertaken in an effort to better understand the diverse methods by which regulatory bodies around the world in different health- and non-health professions fulfilled their mandate of ensuring safe and effective professional practice and ongoing maintenance of competence of practitioners. As a scoping review, this research is indicative, rather than statistically representative, of the regulatory communities studied. Findings should be interpreted with caution, as the convenience sample selected for study is limited to large professions in English-speaking jurisdictions only.

The absence of gold-standard models or practices, and the recognition that, for all professions and jurisdictions this is a work-in-progress, is sobering. Honest self-appraisal by regulators — and the public they serve — is essential in order to manage expectations as to what regulators and quality-assurance mechanisms can actually accomplish. Trade-offs in terms of costs/benefits and risks/rewards must constantly be balanced. While theoretically and conceptually superior methods may exist, real-world exigencies may preclude their

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implementation. Conversely, the existence of such exigencies should not be used as an excuse by regulators or others to condone ongoing use of weaker methods with scant evidence of impact simply because they are quick, cheap and easy. Worse, when such methods are used, they should be honestly presented to the public and other stakeholders, and not be "sold" as being more meaningful or powerful than the evidence behind them provides.

There appears to be interest and efforts amongst regulators to improve the quality of quality-assurance mechanisms, and to address the challenges associated with doing so. As highlighted in this study, every profession in every jurisdiction is struggling with similar issues and challenges; moving towards more collaborative interprofessional and intra-jurisdictional approaches to quality assurance of professional practice may provide opportunities to pool resources, enjoy economies of scale, and ultimately lead evolution of regulatory practices in a more meaningful way. ■

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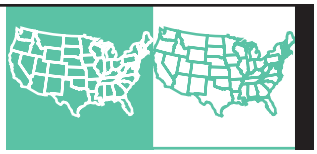

Georgia

GCMB Reviews Internal Policy Regarding Handling of Sexual Misconduct and Boundary Violations

The Georgia Composite Medical Board has adopted a public statement regarding its handling of sexual misconduct and boundary violations. The Board announced last year that it would review how it handles such cases following a series of articles in the *Atlanta Journal Constitution* detailing incidences of sexual misconduct by physicians nationally.

The statement, issued June 9, 2017, notes that the Board began reviewing previous sexual misconduct/boundary violations cases in an effort to ensure it is "following its mission to protect the health of Georgians through the proper licensing of physicians and certain members of the healing arts and through objective enforcement of the Medical Practice Act."

The statement goes on to say that the Board will utilize education, investigation and enforcement mechanisms — including educating physicians about the importance of reporting colleagues who may be committing boundary violations — in order to protect Georgia patients from physicians who use coercion or power for sex.

To view the statement, please visit https://medicalboard.georgia.gov/press-releases.

Source: Georgia Composite Medical Board news release, June 16, 2017

North Carolina

North Carolina Medical Board Collecting Data to Help Ensure Care among Underserved Populations

The North Carolina Medical Board (NCMB) has announced that it will collect National Provider Identifier (NPI) numbers, as well as information about sliding fee scale participation, for all primary care physicians and psychiatrists licensed by NCMB.

The Board is taking the action in response to a request by the North Carolina Office of Rural Health and Community Care, which uses NPI numbers to determine areas of the state that qualify as federal Health Professional Shortage Areas (HPSA). These areas of the state have shortages of primary care physicians, psychiatrists or dentists.

According to NCMB, the use of up-to-date NPI data will help ensure the state's continued participation in the federal National Health Service Corp (NHSC) loan repayment program, which awarded $5.6 million in loan repayments to physicians and other medical and dental professionals who provide care to underserved populations in the state.

NCMB will collect NPI numbers via its online annual renewal questionnaire.

Source: NCMB *Forum*, Spring 2017

Ohio

Opioid Prescribing Declines Significantly in Ohio

The amount of opioids prescribed in Ohio declined in 2016, the fourth consecutive year the state has logged a decrease in such prescriptions.

According to a report compiled with data from the state's Ohio Automated Rx Reporting System, the total number of opioid doses dispensed to patients in Ohio declined by roughly 20% — from a high point of 793 million pills in 2012 to 631 million pills in 2016. The statistics were reported by the State of Ohio Board of Pharmacy.

The state's opioid epidemic has been among the worst in the nation. A report from the Henry J. Kaiser Family Foundation showed that Ohio led the United States in opioid overdose deaths in 2014. Ohio began a prescription-tracking system in 2006 to gather more accurate information on the prescribing of controlled substances. The system underwent a $15 million upgrade in 2015.

A state-wide partnership between state agencies, regulators, law enforcement and health care organiza-

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tions in recent years has played a significant role in reducing opioid abuse in Ohio. Pharmacy Board officials report that between 2012 and 2016 the amount of people fraudulently seeking to inappropriately acquire opioids by "doctor shopping" declined by 78.2%.

Source: State of Ohio Board of Pharmacy news release, Jan. 25, 2017

Oregon

Oregon Board Adopts Medical Marijuana Guidelines

The Oregon Medical Board has adopted new guidelines for attending physicians to help as they consider the use of medical marijuana for their patients. Oregon is one of many U.S. states which have in recent years significantly updated their laws governing the use of marijuana.

The guidelines, which were created by a workgroup of physicians from multiple specialties and a patient advocate, provide recommendations to physicians on the appropriate care of a patient diagnosed with one or more debilitating conditions for which the physician is recommending the medical use of marijuana. They address issues such as the concurrent use of marijuana and opioids, the treatment of pediatric patients, and appropriate treatment and follow-up plans.

Also included are a list of financial prohibitions intended to deter physicians from conflict of interest — ranging from holding an economic interest in an enterprise that provides or distributes medical marijuana to examining a patient for the purposes of diagnosis at a location where medical marijuana is sold or distributed. The guidelines neither encourage nor discourage acting as an attending physician for recommending the medical use of marijuana.

A key tenet of the guidelines is that a recommendation by a physician for the medical use of marijuana constitutes the practice of medicine and the physician must establish a bona-fide patient-physician relationship prior to recommending the medical use of marijuana to a patient.

The guidelines state that physicians in Oregon who recommend the medical use of marijuana should complete a minimum of three hours of category 1 Continuing Medical Education (CME) related to medical marijuana.

To learn more about the guidelines, titled "Guidelines for Attending Physicians when Recommending the Medical use of Marijuana," please visit http://omb.oregon.gov/medical-marijuana.

Source: Oregon Medical Board *Report*, Spring 2017

Pennsylvania

PDMP Efforts in Pennsylvania Now Linked to Other States

Pennsylvania has joined a new effort to better track opioid-prescribing by linking its prescription drug monitoring program (PDMP) with the drug monitoring programs of 10 other states and Washington, D.C.

Users of the Pennsylvania Prescription Drug Monitoring Program (PA PDMP) can now see if their patients have filled controlled substance prescriptions in other states participating in the partnership — including Connecticut, Illinois, Louisiana, Massachusetts, New Jersey, New York, Ohio, Virginia, West Virginia, and Washington, D.C. Additionally, a one-way sharing connection has been established with Maryland, enabling its program users to search the PA PDMP.

According to Pennsylvania Department of Health officials, the partnership is particularly effective in helping curb "doctor shopping" — the practice in which patients inappropriately seek prescriptions from multiple health providers.

"This interstate sharing of patient data helps providers get a more complete picture of their patients' controlled substance histories, regardless of which state they filled their prescription in," said Pennsylvania Department of Health Secretary Karen Murphy.

Source: State of Pennsylvania news release, June 29, 2017

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IAMRA

IAMRA Begins Pilot Test of System to Improve Sharing of Licensing and Disciplinary Information Globally

The International Association of Medical Regulatory Authorities (IAMRA) has announced that it has begun pilot testing a system that will allow for the proactive sharing of licensing and disciplinary information among its members.

IAMRA reports that it has received requests in recent years from members wishing to share information about individuals who have been disciplined in one jurisdiction and are thought likely to seek registration in another, or who have sought licensing using fraudulent means — but that up to now it hasn't had an effective means of responding to these requests.

A particular challenge for the working group, according to IAMRA, has been in developing a system and protocols that are suitable for use by its diverse membership.

In response, IAMRA has been working to develop a mechanism that allows such data sharing to occur. Leading the effort is IAMRA's Physician Information Exchange (PIE) Working Group, which was formally established in 2007.

The first phase of pilot testing of a new system of information-sharing is now under way, with participation from the Australian Healthcare Practitioner Regulation Agency, the FSMB, and the UK's General Medical Council. Once this initial phase of testing is completed, the pilot will be expanded to include additional organizations currently represented on the PIE Working Group. Eventually the system will be made available to all IAMRA members.

The new data-sharing tool developed by the working group — known as the IAMRA Data Sharing System — will enable medical regulatory authorities to upload relevant information about physicians who have been disciplined or have engaged in fraudulent practices.

Medical regulatory authorities will have no obligation to post to the system, according to IAMRA. Those that do so will post information according to their own data-sharing laws and policies, and will be responsible for removing or updating the information provided. Members will be provided with regular alerts to notify them that the system has been updated.

The PIE Working Group continues to identify strategies for removing barriers to sharing licensure/registration and disciplinary/fitness to practice information between jurisdictions, and to develop new initiatives that will support proactive information sharing.

"While we are proceeding with caution, we are hopeful that the system will be available for use by all IAMRA members by 2018," said IAMRA Chair Humayun J. Chaudhry, DO, MACP, who also serves as CEO and President of the FSMB.

To find out more about the Physician Information Working Group, please contact the IAMRA Secretariat at secretariat@iamra.com.

Source: IAMRA website news item, accessed June 30, 2017

IAMRA Adds New Members

IAMRA has announced the addition of several new partners and members, including:

Partner Organizations:

- Accreditation Council for Continuing Medical Education
- American Academy of Family Physicians
- American Medical Association

Member Organizations:

- State of Maine (U.S.) Board of Licensure
- College of Physicians and Surgeons of Ontario, Canada

IAMRA currently has 110 members from 47 countries.

Source: IAMRA website news item, accessed June 30, 2017

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Global Conference on Medical Regulation Slated for Dubai

IAMRA has announced that its 13th International Conference on Medical Regulation will take place in Dubai, United Arab Emirates October 6-9, 2018. The event will be hosted in partnership with Dubai Health Authority.

During IAMRA's biennial conference, regulators from all over the world convene to develop policy and share information and best practices in medical regulation. To learn more about the 2018 conference, please visit www.iamra.org.

Source: IAMRA website news item, accessed June 30, 2017

Ireland

Irish Health Care Organizations Develop Guidance on Controlled Substances

The Medical Council and the Pharmaceutical Society of Ireland have announced that they are working collaboratively to develop guidance on issues of joint concern related to controlled substances for both medical practitioners and pharmacists in that country.

The first jointly developed guide to be offered by the two organizations is titled "Safe Prescribing and Dispensing of Controlled Drugs," offering guidance on a wide range of topics related to the safe prescribing of opioids and other drugs.

The guide includes suggestions intended to help physicians and pharmacists work more closely together to identify risk factors and high-risk patients as they prescribe and dispense medications.

The new guidance can be viewed at http://thepsi.ie/Libraries/Consultations/PSI_MC_Joint_Guidance_on_Controlled_Drugs.sflb.ashx.

Source: Medical Council of Ireland website announcement, accessed June 30, 2017

United Kingdom

Heavy Workloads are an Issue for Many Physicians in Training in the UK, Surveys Show

More than half of all physicians in training in the UK say they work beyond their regular hours at least once a week, and more than 20 percent say their work patterns regularly leave them deprived of sleep, according to recent General Medical Council (GMC) national training surveys.

The GMC, which regulates the practice of medicine in the UK, published the initial findings from its annual UK-wide surveys of more than 53,000 physicians in training and more than 24,000 senior physicians who act as trainers.

"Workload issues, and the impact they can have on doctors' education and training, remain a persistent and troubling issue," said GMC Chief Executive Charlie Massey. "Tiredness and fatigue can impair decision-making, and so can impact on patients as well as the doctors themselves."

"It is important that education providers do what they can protect the quality of training and the well being of doctors, using the results of this year's surveys to target their efforts," he added.

The national training surveys were open between March and May of 2017, and achieved response rates of 98% for physicians in training and 53% for trainers.

The GMC is now analyzing the results of the surveys, to see how trends are reflected and differ across specialties and locations, and will publish a more detailed report, based on its findings, later in the year.

To learn more about the survey, please visit www.gmc-uk.org.

Source: GMC news release, July 4, 2017

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INFORMATION FOR AUTHORS

About the Journal of Medical Regulation

The *Journal of Medical Regulation*, a publication of the Federation of State Medical Boards, publishes scholarly articles supporting evidence-based regulation in the United States and international medical regulatory communities, with the goal of promoting best practices, critical thinking and collaboration among medical boards. We welcome all contributions that enhance the understanding and advancement of medical regulation.

Editorial Policies

The requirements for manuscripts submitted to the *Journal* are largely based on the "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals" of the International Committee of Medical Journal Editors (ICMJE). Authors are encouraged to refer to the copy published by the organization at www.ICMJE.org. When authors submit a manuscript of any type or format they are responsible for disclosing all financial and personal relationships that might bias or be seen to bias their work. The *Journal* requires all authors to complete and submit the ICJME's form for disclosure of potential conflicts of interest. All manuscripts submitted to the *Journal* undergo a rigorous peer-review process, coordinated by the *Journal*'s Editor-in-Chief and Editorial Committee. A full description of the *Journal*'s peer-review process, and its editorial policies and requirements, is available at jmr.fsmb.org.

Submitting Manuscripts

The *Journal* welcomes manuscripts on an ongoing basis in several categories, including Original Research, General Scholarly Articles, State Medical Board Best Practices, Commentary, and Letters to the Editor. For more detailed information on these categories, including content parameters and suggested length, please visit jmr.fsmb.org. Queries and manuscripts should be sent by email to editor@fsmb.org or mailed to Heidi Koenig, MD, Editor-in-Chief, Journal of Medical Regulation, Federation of State Medical Boards, 400 Fuller Wiser Road, Euless,TX 76039

Manuscript Preparation Guidelines

The manuscript components should include a title page, abstract, text, references, and as appropriate legends, tables, and figures. Start each of these sections on a new page, numbered consecutively, beginning with the title page.

The title page should contain only the title of the manuscript and a word count (not including abstract, acknowledgements or references). A separate list of all authors should include full names, degrees, titles and affiliations.

Manuscripts with multiple authors, especially research pieces, should address author contributions in the following areas: study concept and design; acquisition of data; analysis and interpretation of data; drafting of the manuscript; and critical revision of the manuscript for important intellectual content.

The manuscript pages should be numbered. References should conform to the *AMA Manual of Style*. The manuscript should include an abstract of 200 words or less that describes the purpose of the article, the main finding(s) and conclusion. Footnotes or references should not be included in the abstract.

For submission and review, acceptable manuscript file formats include Word or Word Perfect. Do not submit your manuscript in PDF format. Use 11- or 12-point font size, double-spaced text, and leave right margins unjustified (ragged).

Any table or figure from another source must be referenced. Note that the *Journal* rarely publishes photos but will consider their use based on the context of the manuscript.

Reference Formatting Guidelines

The number of references should be appropriate to the length of the text, and references should appear as endnotes. Authors are responsible for the accuracy and completeness of their references and for correct text citation. Number references in the order they appear in the text; do not alphabetize. In text, tables, and legends, identify references with superscript Arabic numerals. When listing references, follow AMA style and abbreviate names of journals according to the listing in *PubMed*. List all authors and/or editors up to 6; if more than 6, list the first 3 followed by "et al." Journal references should include the issue number in parentheses after the volume number.

More details about manuscript preparation, including examples of how to format references, are available at jmr.fsmb.org.

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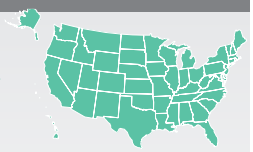
Bring the Interstate Medical Licensure Compact to YOUR State

Implementation grants available from the FSMB Foundation

A new, expedited pathway to medical licensure



FSMB FOUNDATION

The Interstate Medical Licensure Compact is a new licensing pathway for physicians that enables them to gain licensure in multiple states. Eighteen states have joined the Compact so far. Soon, physicians in these states will be able apply for multiple licenses faster and more efficiently than ever before.

GRANT OPPORTUNITY

About the Grants

The FSMB Foundation is pleased to begin accepting applications for grants to support projects associated with the Interstate Medical Licensure Compact. Multiple grants will be awarded, from a total fund of $60,000.

Grants can be used for a wide array of activities. Examples include education of stakeholders interested in the Interstate Medical Licensure Compact, implementation of Compact administrative requirements, staff training, technical enhancements, and more.

Application Information

Grant applications are now being accepted. Applications should include the name of the applicant organization, contact information, a narrative to include the purpose and description of the proposed project, a budget estimate (how the funds will be used), and a timeline for completion. Applicants may apply for more than one grant if seeking funding for multiple projects.

Grant applications may be submitted to Kelly Alfred at KAlfred@fsmb.org.

Help us bring health care faster and more efficiently to patients in need—join the Interstate Medical Licensure Compact!

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